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Begin, at Airport, Asks Stepped-Up Autonomy Talks

But Venue Remains in Dispute

By William Claiborne

Jerusalem, April 14 (WP) — Prime Minister Menachem Begin said today that he would like to see the negotiations on autonomy for 1.2 million Palestinians in the West Bank and Gaza Strip start in the May 26 target date for the election of a self-governing council in the occupied territories.

Begin, who is flying to Washington, said at an airport news conference that, while he is for a step in the negotiations, the location of the meetings remains undecided.

Responding to reports that Mr. Begin and President Anwar Sadat of Egypt had agreed in principle to a move of the Egyptian-Israeli negotiating teams to the House in Washington for sessions until May 26, Begin said he had been contacted by Israel's Cabinet, to give him a final decision on the location of the talks.

Begin said that the talks would take place in a "neutral place."

Several Cabinet ministers, including Interior Minister Yosef Burg, head of the Israeli negotiators, expressed reservations about the move, saying that the talks should be held in Washington, instead of alternating between Egypt and Israel. Among the reasons Mr. Burg has cited is the problem of keeping ministers from their posts. Mr. Burg, Foreign Minister, Yitzhak Mordechai, are accompanying the prime minister to Washington.

Mr. Begin is also known to be opposed to the move to Washington, saying that the talks should be held in a "neutral place."

Mr. Begin said that the talks should be held in a "neutral place."



British farmers demonstrate yesterday outside the French Embassy in London.

British Farmers Protest French Tactics

LONDON, April 14 (AP) — About 100 British farmers protesting France's tactics in the Common Market demonstrated outside the French Embassy today with a British lamb carcass draped in a Union Jack.

But when the farmers tried to give the carcass to French diplomats, the door of the embassy was slammed in their faces.

"They opened the door sheepishly and accepted our protest letter but not the lamb," said Philip Tomsett, who organized the protest for the Kent Farmers and the Women's Farming Union of Britain. "It is regrettable they did not accept the gift."

Carrying banners and placards, the farmers marched through London's Knightsbridge section, shouting "Fair play, it's your lamb," and "Jingle, jangle, Giscard d'Estaing."

The group planned to leave the carcass at Harrods, a department store that opened a promotion campaign today for French food products. The store has promised to promote British food next year.

Mr. Tomsett said that the message of the farmers is simple. "We intend to tell the French to respect the rules of the EEC set out in the Treaty of Rome, abide by the judgment of the European courts, and not to ruin our mutual market by massive imports of excess products," the spokesman said.

He also wants "the British public to leave French goods on the supermarket shelves until fair play is returned to our market."

The farmers claim that the French government is damaging British agriculture by flooding the British market with French goods while blocking the export of British commodities like lamb.

Recently, a group of French farmers burned the British flag outside the European Parliament building in Strasbourg, France.

Some Hope for Common Front Allies Delay Response To Carter Hostage Bid

By Axel Krause

PARIS, April 14 (IHT) — Major U.S. allies in the European Economic Community ruled out today any immediate new measures to back President Carter in forcing the release of hostages in Iran, while stressing a need for further consultations.

In Bonn, London and Paris, senior government officials said they hoped a common front would emerge, possibly at the EEC foreign ministers' meeting scheduled in Luxembourg on April 21. None would comment on the chances of reaching a joint position before then.

The Luxembourg meeting, to discuss a possible coordinated EEC strategy for action in Iran, was planned before President Carter's weekend call for new retaliation.

In Tokyo, meanwhile, the Foreign Ministry said Japan's ambassador to Iran, who has been recalled, would be consulted about President Carter's new request. There were indications that sanctions might be increased. Government and financial sources said Japan was prepared to ask Mexico to sell it an additional 200,000 barrels a day of oil if sanctions led to a cutoff of Iranian oil.

Kyodo News Agency reported that Japan's Ministry of International Trade and Industry had asked steelmakers to give serious consideration to the matter of shipping steel to Iran.

tion of earlier reports that West German government sources had said privately that Bonn intended to join the United States in economic action even if other EEC nations did not follow.

In London, Prime Minister Margaret Thatcher told Parliament that Britain would continue consulting its EEC partners and other friendly countries on joint action, but she ruled out any further measures immediately.

Mrs. Thatcher stressed the need for strong backing of President Carter, saying that Americans

"understandably expect solidarity from their allies, and we, for our part, have been giving and will continue to give them our utmost support." She said she hoped that "the necessary decision will be taken" during the Luxembourg meeting.

A spokesman for the French Foreign Ministry today held out little hope for a coordinated EEC position in line with the approach suggested by Mr. Carter. "With the possible exception of Mrs. Thatcher, there is little prospect of supportive action," he said. "Support for (Continued on Page 2, Col. 6)

U.S.-European Gulf Seen Reaching Crisis

By R.W. Apple Jr.

LONDON, April 14 (NYT) — Across Western Europe, politicians and commentators are using the word "crisis" to describe the gulf that has opened between the United States and its principal allies over the best way to deal with the turmoil in the Middle East.

While no absolute rupture of the Atlantic alliance seems imminent, the tensions between the United States and Western Europe are likely to intensify in the weeks ahead, making a concerted allied policy impossible. Few Europeans expect President Carter's impassioned appeal to the allies to rally behind the United States — broadcast last night in Britain, France, West Germany and Italy — to alter the picture noticeably.

At the root of the problem is the feeling of many European leaders that they are being asked to rush into action that they consider neither in their own best interests nor in those of the alliance as a whole. If they do not act, Mr. Carter has told them both publicly and privately, he may be forced to take steps that they will find distasteful, such as a naval blockade of Iran.

The Europeans know that public opinion in the United States has been inflamed by the events in Iran and Afghanistan. They understand the pressure Mr. Carter feels during an election year to do something fairly quickly, but they resent his tactics, and that resentment reinforces their own reluctance to act.

By deciding in Lisbon last week to launch a new diplomatic initiative in Iran, instead of breaking off diplomatic relations or imposing an economic embargo, the foreign ministers of the nine Common Market countries demonstrated more forcefully than ever their nations' reluctance to follow the lead of Washington, which most of them have come to distrust in recent months.

The affair of the Tehran hostages is the key issue of the moment. But with the exception of the British and Dutch, EEC members have shown a lack of enthusiasm for Mr. Carter's campaign for a Western boycott of the Moscow Olympics as a protest over the Soviet Union's intervention in Afghanistan.

And the Europeans are taking an increasingly independent line in the

(Continued on Page 2, Col. 7)

eking Moves to Abolish freedom of Speech, Press

By Robert Crabbe

BEIJING, April 14 (UPI) — Chinese leaders today endorsed a move to take from the constitution key provisions protecting freedom of speech and the press.

The move, reported by the ruling committee of China's parliament, was expected to be acted on by the full session of the National People's Congress in June.

The 120-member standing committee, the supervising body of the legislature, is the full committee of Article 45 of the constitution, which reads: "Citizens enjoy freedom of speech, correspondence, press, assembly, association, petition, demonstration, and the right to strike, and have the right to speak out freely, air their views fully."

The ban on press freedom, already in effect, is the latest in a series of moves to restrict the press in China since mid-1979. Until recently, any Chinese writer or publisher complaining anything and hang it up for the press to read on the walls of Peking.

The crackdown against the press under way last year, when posters were restricted to a single 200 yards long on Peking's Chang'an Boulevard.

Communist Party stalwarts have argued that wall posters divulged secrets and have said that they were used to "attack the dictatorship of the proletariat."

In a February meeting, the Central Committee of the Communist Party recommended the complete abolition of the right of Chinese people to write wall posters.

Last year, posters were banned from the Chang'an site,

Proposal Would Bar Flags, Anthems

IOC Move to Forestall Boycott Reported

From Agency Dispatches

LONDON, April 14 — The International Olympic Committee, in what well-placed committee sources said today would be an effort to prevent Western countries from joining the U.S. boycott of the Moscow Olympics, will discuss the abolition of all flags and anthems at the Games at its scheduled meeting next week in Lausanne.

But a decision today by West Germany to urge its national Olympic committee to join the boycott indicated that the move to stay away from the Games could snowball in Western Europe whatever the international committee does.

Foreign Minister Hans-Dietrich Genscher said today that West Germany will urge its Olympic committee to boycott the Games. His statement followed Chancellor Helmut Schmidt's assertion yesterday that West German athletes should stay away from the Olympics if Soviet troops are not withdrawn from Afghanistan by May 24, the deadline for accepting invitations to the Games.

Most Western and Eastern European sport leaders criticized the U.S. Olympic Committee as having succumbed to political pressure in its 1,604-797 weekend vote to boycott the Games. At the same time, Western European Olympic committees did not rule out the possibility that they will be obliged to follow suit, and many agreed that the

West German decision would influence their votes.

Although the West German committee will not vote until May 15, it has said it will not act against its government's wishes.

A senior U.S. Defense Department official said afterward, referring to the Midwest: "We fully intend to do what is necessary to deter possible threats in an area that is vital to Western interests."

He said response was positive to suggested acceleration of defense programs for Europe, although, he added, some members were more forthcoming than others. He said the meeting dealt only with measures relating to Europe and did not discuss possible action in the Midwest.

Very Restrained

A British official said, echoing the general mood in Europe: "I've been to the States, I've seen television, I know how people feel, and I think they should damn well feel that way about the hostages. Carter has been very restrained, and we appreciate that. But nobody asked us to do anything until six days ago. We really must have time to consult."

West Germany plans to attend the Luxembourg meeting with a clear position on what the EEC response should be, Klaus Boelling, the government spokesman, said in Bonn today. He did not elaborate on that position, adding that his government had not been notified by the United States of any deadline for allied sanctions.

There was no official confirmation.

Lloyd Cutler, the White House counsel, said the administration has no plans to launch a substantial, new campaign to persuade others to join the boycott, but will continue with "a major diplomatic effort, within the limits of how you talk to and deal with your own allies."

In Prague today, the Communist Party newspaper Rude Pravo, echoing Soviet condemnation of the USOC vote, said that "President Carter, his aides and ministers, the whole group of the ruling class which is now in power in the United States, have led a war against reason, against the Olympic idea and against understanding between nations."

The International Olympic Committee (Continued on Page 2, Col. 4)

45 Red Brigades Suspects Arrested

By Henry Tanner

ROME, April 14 (NYT) — Italian authorities indicate that a major breakthrough in the fight against terrorism has been achieved after the arrests in the last few days of about 45 persons on suspicion of being members of the Red Brigades terrorist organization.

Most of the arrests took place in Turin, Milan and Biella, a spinning center in northern Italy. Many of the persons arrested were factory workers, including some who had served as floor delegates for labor unions. Some were members of university faculties.

The authorities give the impression that the high command of the Red Brigades in the Turin area has been seized. Although official claims of dramatic successes in the fight against terrorism have been proved wrong in the past, the latest wave of arrests appears to have exceptional importance.

For the first time there are indications that the information leading in the arrests was furnished by confessed Red Brigades members already in jail. In the past, suspected terrorists almost invariably refused to cooperate with investigating magistrates. The few exceptions to this rule were marginal figures, and their testimony was open to question. Past arrests were almost solely due to patient police work, such as constant surveillance of thousands of suspects, interpretation of captured documents, and ballistic tests on captured weapons.

February Arrests

The new development appears to have started with the arrests in February in Turin of Patrizio Peci and Rocco Micalotto, known members of the Red Brigades who had been sought by police for several years. Mr. Peci was believed to be the head of the Turin branch of the Red Brigades. He has been named by investigating magistrates as having played an active role in the kidnapping of former Premier Aldo Moro two years ago and in other major terrorist attacks since then.

Reports in Italian newspapers during the weekend named Mr. Peci as the man who furnished information about other terrorists to the authorities. The reports quoted anonymous police sources and magistrates. Officials involved in the fight against terrorism and in the judicial investigations have made few attributable statements, but most newspapers carry several columns of unattributed information on the subject every day.

Some officials recently said, without permitting attribution, that among the suspected terrorists arrested in the last two months were several drug addicts whom the investigators were able to induce to talk by depriving them of the drugs they were used to.

Most of the 45 persons arrested

in the last few days had not appeared on lists of suspects before, but had lived apparently normal lives in factories and universities. This has sharpened the impression that the arrests were the result of inside information.

Flat Workers

The arrested persons made no attempt to escape, and no shots were fired on either side. Material discovered in the houses of the arrested persons included a radio transmitter and a gun that police ballistics experts say may have been used in several of the principal terrorist attacks of the last three years.

The persons arrested included two workers who were among 61 dismissed by the Fiat automobile company in October, accused of acts of violence and petty sabotage in a Turin plant. Labor unions attacked Fiat for the dismissals, and a labor tribunal ordered the reinstatement of the 61. Fiat refused to comply with the order.

Domenico Jovine, one of the Fiat pair, read a statement to the investigating magistrates saying that he had long been an active member of the Red Brigades and that many of his fellow workers were sympathetic to their cause.

Luciano Lama, head of the Communist-dominated Italian Labor Organization, retorted in a front-page article in the Rome newspaper La Repubblica that the terrorists, on the contrary, were more isolated than ever in the factories. He urged workers to denounce not only persons they suspected of terrorist links, but also co-workers who try to intimidate foremen and union delegates.

Southwest U.S. Cities Put Brakes on Growth

By Robert Lindsey

PHOENIX (NYT) — Many of the growing cities in the U.S. Southwest, whose sizes, shapes and characters have been determined largely by the easy mobility of the automobile, have begun to think about a future without cheap gasoline.

In such cities as Phoenix, Dallas, Albuquerque, Houston and San Diego, political leaders are questioning the traditional form of urban expansion in the Southwest — relentless annexation and construction of more and more tracts of single-family homes at the fringes of town. They have started to encourage development of higher-density housing on smaller lots near the central city.

Mass transit, which until recently was regarded as a tax-subsidized benefit for the poor and the elderly, is looked upon increasingly as a realistic alternative for middle-income job holders.

"In-filling" is a newly popular urban strategy. In Phoenix, for example, a citizens' committee last month adopted a plan under which developers would be given financial and other incentives for building in undeveloped pockets of neighborhoods that they had bypassed in the push to the city's edge. And the City Council has

adopted a land-use plan envisioning "urban villages" within the city, each with jobs and housing, in a strategy aimed at reducing the long, gasoline-consuming trips between home and job.

Compared with the recent history of development in the Southwest, where one-person, one-car mobility has long been considered a kind of birthright, such ideas seem heretical, old-timers admit, and there is still much resistance to them. But urban officials say they reflect a growing acceptance of the fact that the United States faces a future without cheap gasoline.

Moreover, some residents express concern that the traditional development patterns have led to deterioration in the quality of life in the cities. And the soaring cost of housing has made the conventional suburban home unaffordable for many young people and has forced them to consider older houses or apartments near the central city.

Lee Simpson, a Dallas city councilman, said: "When you look at the Sun Belt cities which have exploded in the past 20 years, you realize how terribly dependent they are on the automobile for commerce. It's the lifeblood of a city. You realize how

vulnerable your economy is, not only to an interruption in the fuel supply, but to the effect of higher costs when you have the kind of dispersed land-use pattern we have."

Dallas must expand its transit system and find other ways to reduce its reliance on gasoline, he said. At least to a small extent, he added, "it's already starting to happen," with the city's first projects to develop bypassed areas.

For example, Robert Stephens and Elaine Tanner, a husband-wife contracting team, said they discovered a strong demand for new homes in a formerly deteriorating neighborhood called Old East Dallas.

"It's only two miles from the downtown, but it had been overlooked," Miss Tanner said. "We bought 35 lots at \$6,000 each — a fraction of the cost of comparable lots elsewhere in the city. She said 18 homes have been sold, several to young, unmarried people. Comparable lots in the area now sell for \$16,000.

Officials in several cities said there is still substantial pressure to continue development of the outskirts, and most said they did not foresee it ending altogether. But most also stressed that they thought inevitable economic

forces were changing the old ways.

Many businessmen who have a stake in the continued expansion of fast-growing Tucson, Ariz., for example, oppose any limiting policy. But as city planner David Taylor pointed out recently, in a few years the city will probably be unable to provide utilities for such areas because it would reach its legal limit for issuing bonds to finance them.

Sewer Capacity

In Phoenix, growth has been so rapid that the city says it may have to halt new home construction this summer because the city sewer system is nearing capacity, a situation that adds more pressure to build homes in bypassed areas that already have utilities.

The cost of gasoline appears in some ways to have underlined worries over what some people see as the deteriorating quality of life in the Southwest's booming cities.

In Houston, for example, recently elected Mayor Jim McComm said traffic congestion had become so severe that the city should cease its rapid annexation and concentrate on in-filling and other policies.

Mayor Pete Wilson of San Di-

inside
The first of
a two-part
special report on
German technology.
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But Western Diplomat Foresees Long Stay

Soviet Decision on Kabul Called Hasty

By Stuart Auerbach

NEW DELHI, April 14 (WP) — The Soviet intervention in Afghanistan in December was a hasty decision by the Kremlin after two other options had failed, a senior Western diplomat has said during a recent stopover here.

The diplomat, an expert on Soviet affairs, said that Moscow had not intended to commit 100,000 troops in Afghanistan, but felt it was forced to do so after a "surgical strike" by crack airborne troops just after Christmas failed to get rid of President Hafizullah Amin of Afghanistan.

The idea, the diplomat said in a background talk with defense strategists here, was to kill Amin quickly and quietly, or get him out of Afghanistan, so that he could be replaced by an Afghan leader that the Russians had more faith in — probably the current Moscow-installed president, Babrak Karmal.

General Failed

But Amin's bodyguards fought more fiercely than the Russians anticipated, and the "surgery" ended up much bloodier than expected. This expert believes that the Soviet commander of the operation, Lt. Gen. Viktor Paputin, was killed in the attack on the Kabul presidential palace on Dec. 27. There have been reports from Moscow that Paputin, a deputy minister of internal affairs, committed suicide in disgrace after his mission's failure, but this expert discounted those reports.

As evidence that the large-scale intervention was hasty, the diplomat said that the first units sent overland were not ready for combat. In contrast to the crack airborne units from central Russia, who had flown in to attempt the quick overthrow of Amin, the troops that followed belonged to "C-category" divisions that were unprepared for battle and were far below authorized strength. They were mostly units from an Asian republic, and most have been replaced since the diplomat was quoted as saying by other diplomats who attended the background briefing.

Now that the Russians are in Afghanistan, this diplomat does not expect them to pull out until they have achieved their mission of pacifying the country to the extent that the opposition has ceased to be a significant military force. Traditionally, Soviet military planners believe in overkill. They are moving in forces and building up reserves for a classic summer campaign using heavy force against the insurgent groups in the mountains. If they fail to wipe out the rebels this summer, this expert predicted, they will regroup during the fall and prepare another big campaign.

Extremely Bloody

These campaigns are likely to be extremely bloody, he said. There has been a taste of that already as rebel groups have accused the Russians of waging a scorched-earth campaign, burning villages and crops before them, in the Konar valley in eastern Afghanistan. The Russians are expected to rely heavily on air power, including the Mi-24 helicopter gunship, which has turned out to be the weapon most feared by the Afghan rebels.

While many Americans draw parallels with Vietnam, experts in New Delhi on South Asia see the Russians as fighting a modern version of the last British-Afghan war, in which rebellious tribesmen around the Khyber Pass were put down in the 1920s by the primitive planes that dropped bombs on them. The Afghans are experts in hit-and-run warfare, but the barren terrain does

not give them hiding places from airborne attacks, the senior Western diplomat said.

In his view, the key to the Soviet action is concern in the elderly leadership in the Kremlin to make sure that the Soviet state is secure for the succession. They are especially concerned, he said, that there should be no weak link in the line of buffers around the Soviet heartland.

Their prime worry was Afghanistan, where a surprise coup had installed a Marxist government in 1978. That government was seen by the Kremlin as too radical for its own good, alienating support it might have gleaned in the Afghan countryside, the diplomat said.

At first, President N. Muhammad Taraki was seen as the man to tame Amin, his more radical No. 2. Last September the Russians backed Taraki to take all power from Amin, but Amin outsmarted and killed him. With that option out the window, the Russians decided to remove Amin, but this, too, failed. The intervention followed.

More Troops

WASHINGTON, April 14 (WP) — Deputy Secretary of State Warren Christopher said yesterday that the Soviet Union is "pouring in additional troops" in Afghanistan and has more than 100,000 men there — probably more than 110,000.

Previous estimates were that the Soviet Union had sent in 80,000 or 85,000. Another 20,000 to 30,000

troops were reported to have been massed along the border. "The generals are asking for more troops," Mr. Christopher said. "They're having a great deal of difficulty using the Afghan Army."

Meanwhile, Washington's response to the intervention drew sharp criticism from Sen. Henry Jackson, D-Wash., who asserted on television that it was "criminal" that the United States still had not established tactical air and supply bases in countries willing to have them, in particular Egypt, Oman and Somalia.

Sen. Jackson said he had received encouragement from President Anwar Sadat of Egypt for a Mideast security arrangement. At the call of a threatened government, other Islamic states would provide help, including ground troops, while the United States would provide air and supply support but not troops. As prospective members of the pact he listed Egypt, Morocco, Oman, Saudi Arabia, Somalia, Sudan and Tunisia.

Raiders Shot At

NEW DELHI, April 14 (UPI) — President Karmal was shot at in February, the Press Trust of India reported yesterday without saying whether he was wounded. An attempt was also made on the life of Deputy Premier Saitan Ali Khistmand, PTI said, again without giving details.

Murder Trial of 2 Whites Ends an Era in Rhodesia

By John F. Burns

SALISBURY, April 14 (NYT) — "I thought the only way to arrest the slide was to blow the whole thing sky-high."

The speaker, a stockily built white Rhodesian, was talking of an avalanche or a quarry collapse. Only the automatic rifles and ammunition magazines on the evidence table would have revealed to the casual listener that he was speaking of a crime that has shocked whites here.

Robert Verdal-Austin, until his arrest, a district commissioner, a position of prestige wherever colonial rule on the British pattern was established, in the Muzdi area of northwestern Rhodesia, close to the Mozambique border, it gave Mr. Verdal-Austin plenipotentiary powers over tens of thousands of blacks who looked to him for their needs in education, medical care and a dozen other fields, including justice.

As the guerrilla war intensified last year, the Muzdi area was overrun by black guerrillas loyal to Robert Mugabe, and Mr. Verdal-Austin's empire shrank. Then, on Jan. 6, after a drinking spree in Salisbury, accompanied by two subordinates, set off on a murderous drive back to Muzdi, he landed him and one of the other men, Graeme Duncan, 42, in the High Court in Salisbury on trial for murder. The third official, Peter Von Memmert, turned state's evidence in return for immunity.

On the 125-mile journey by Land-Rover the three fired automatic rifles on black civilians at least 11 times, killing the two occupants of a pickup truck and wounding at least seven other persons, and on one occasion raked a bus carrying 50 passengers.

The incident was hushed up, partly because of fears among British officials who had reassured power here the previous month that publicity would wreck the fragile cease-fire they were stitching together between the two guerrilla armies and the government forces. The cease-fire had begun the previous week and its success was crucial to the elections the British had called for February, which were won in a landslide by Mr. Mugabe.

At midnight on Thursday, Rhodesia will become the independent black state of Zimbabwe, and the trial, which is likely to end early in the week, could stand as the last symbol of the white man's justice for the country's 7 million blacks.

Because of the broad defense being mounted, the trial also is revealing how spent white Rhodesia was when the British pushed the Salisbury government and the guerrillas into a peace pact at the Lancaster House conference in London.

Seeking Pardon

Mr. Verdal-Austin told the High Court when he took the stand that the Muzdi area was "completely lost" to the Mugabe guerrillas by the time the peace conference was called.

The official is resting his defense on a bid for pardon. After Mr. Mugabe's election victory, the British governor, Lord Soames, signed an amnesty for politically motivated crimes committed by either side up to March 1 and several Mugabe guerrillas facing murder charges have been freed.

If convicted, the two officials face

a possible death sentence or a jail term of as much as 25 years.

Essentially, the prosecution has set out to prove that the murders were the work of two drunks motivated by racial hatred. The defense is attempting to show political motivation in an effort to win acquittal under the amnesty.

The defense case was helped by a high-ranking official of the Home Affairs Ministry, Lionel Leach, who was Mr. Verdal-Austin's superior at the time of the killings. He testified that the shootings, if intended to wreck the cease-fire, had come close to achieving their objective. "It put a tremendous strain on a tenuous arrangement," he said. "It could not have happened at a worse time."

U.S. Sets Amount of Aid

WASHINGTON, April 14 (AP) — The United States intends to provide up to \$15 million in agricultural and economic assistance this year to independent Zimbabwe and between \$25 million and \$30 million in fiscal 1981, the State Department said today.

Allies Delay Reply to U.S.

(Continued from Page 1)

Mr. Carter, yes, but not measures now.

Officials stressed that France has supported the principle of economic sanctions against Iran, if necessary, and that the government considers the problem of the hostages to be dramatic and to require a solution.

But, they say, the question of timing is essential, and it is a sticking point with the United States.

France has told the United States that it prefers to wait before taking up the issue of possible economic sanctions, until after parliamentary elections are held in Iran next month, the officials added.

A senior official said: "Now we hear from Mr. Carter that action is needed now, but we ask why. Apparently the Americans accelerated the timing. . . . We have shown and still show solidarity with the United States on the basic question of the need for releasing the hostages."

Premier Francesco Cossiga of Italy today declared his government's "full solidarity" with U.S. efforts to free the hostages, but he did not say what measures Italy was prepared to take. He said Italy would adhere to a common policy worked out with its eight EEC partners.

In several capitals, diplomatic sources said they expected governments to take time analyzing reports from their ambassadors, who were recalled from Iran after last week's joint decision in Lisbon.

France's ambassador, Raoul Delaive, was expected in Paris by early tomorrow, the Foreign Ministry said tonight. French officials stressed that Mr. Delaive was returning to Paris to report on the recent meeting between President Abolmohsen Bani-Sadr of Iran and the ambassadors of major U.S. allies in Tehran. "As with our allies, this is only a review and should not be viewed as a step toward severing diplomatic relations with Iran," an official said.

WORLD NEWS BRIEFS

Knife Thrown at Gandhi Hits Security Aide

NEW DELHI, April 14 (NYT) — Prime Minister Indira Gandhi escaped unhurt today when a knife thrown by a man narrowly missed her. The attack occurred on the grounds of Parliament as Mrs. Gandhi walked toward her car after gathering a statue of a leader of India's independence movement. The five 5-inch-long knife, thrown from a distance of 6 feet, hit a security aide, who was not hurt.

Bogota Hostage Agreement Reported Near

BOGOTA, April 14 (UPI) — Colombian Foreign Ministry officials say a hooded woman guerrilla outside the besieged Dominican Republic Embassy for a 15th round of ransom negotiations, and diplomatic speculation that U.S. Ambassador Diego Asencio and 17 other hostages would be freed this week.

The guerrilla of the April 19 Movement was a thin hood to meet officials in a van parked outside the embassy. Peruvian Consul Alfonso Tejeda, one of the diplomatic hostages held since Feb. 27, sat in as the guerrilla left.

The siege was in its 48th day. Diplomatic sources said that an agreement appeared to be close. The 10th anniversary of the guerrilla movement was Saturday.

Report Urges Easing of S. Africa Secrets Act

CAPE TOWN, April 14 (Reuters) — A government commission report recommended a softening of South Africa's official secrets act, saying the press should keep its watchdog role in dealing with non-sensitive defense matters.

The report said exposure of government misdeeds, neglect and dishonesty — when such exposure did not reveal operational or security secrets — had to be permitted to maintain "the golden thread" of relations between the authorities, the media and the peoples of the country.

The report, to be presented to Parliament, stems from government attempts to reconcile national security with news freedom. It recommends the introduction of a registration system for foreign journalists in South Africa, and the monitoring of propaganda and information activities on behalf of foreign interests.

Magazine Says U.S. May Arm China in War

WASHINGTON, April 14 (UPI) — The Carter administration is trying to provide China with nonmilitary weapons, including Chinese-made technology, the magazine said.

The United States is maintaining the possibility of assisting China in a conflict by providing early warning, reconnaissance and intelligence support without directly involving U.S. forces, the report said.

The magazine said that Defense Department policy is to maintain Western Pacific defense alliances with Japan, South Korea and other allies and a parallel action with China. It said that the Carter administration is wary of taking any action against Iran — such as a boycott — that would affect Japanese oil imports and jeopardize U.S.-Japan relations.

Tito Develops Liver Failure and Jaundice

BELGRADE, April 14 (UPI) — President Tito's doctors said today he had developed liver failure and jaundice.

The medical bulletin said that the condition of Marshal Tito, who is 76, has worsened. "The already noted liver failure has shown deeper, more pronounced signs accompanied by jaundice in recent days," and treatment was begun, the bulletin said.

However, this was the first time that a medical bulletin mentioned failure. Marshal Tito's kidneys have failed, and he has pneumonia, the bulletin said; however, that the "pneumonia does not show tendency to further spreading."

European Mistrust of U.S. Widens Breach in Alliance, in E

(Continued from Page 1)

Iran, and the French belief that April 14 (NYT) special role in the world.

President Valéry Giscard d'Estaing, who alleged that Mr. Carter's policy in 1972, Watergate, was a breach of the alliance, said that France must safeguard its own interests even if others turned their backs upon it.

Mr. Giscard said that France's reluctance to be led by a fellow into what French diplomats call "American economic warfare" with Iran, according to similar stems from his desire to maintain a close relationship with the Third World.

The British think "pressing" in this week's "The Economist" magazine, 40, expects the West can only weaken Iran's position by persuading the National Council of the Islamic Revolution in Washington to believe, have arisen largely from the cause the militants already have suggested that Iran is "susceptible" to "Western" submission to assault.

For the EEC as a whole, the amount of the Iranian oil is not particularly important, as well as Iran. They announced last year that they would cut back on Iranian oil by 10 percent, but they have not done so.

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Tehran Red Cross representative Harald Schmid de Grueneck, in dark jacket, gesturing, and Dr. Bernard Liebeskind, at far right, stand outside U.S. Embassy after visiting hostages yesterday.

Compromise With Tehran Militants on Terms

2 Red Cross Officials See U.S. Hostages

By William Branigin

TEHRAN, April 14 (WP) — A Red Cross team visited hostages being held at the U.S. Embassy today after reaching a compromise with their militant captors in an effort to see all the Americans.

Two Swiss Red Cross officials — Harald Schmid de Grueneck, the organization's permanent Tehran representative, and Bernard

Liebeskind, a doctor who arrived from Geneva — spent about nine hours in the embassy. They said that they believed that they had seen all the hostages, but would not give a number.

Contrary to normal Red Cross procedure during visits to detainees, it was learned, the team waived a condition that the hostages be interviewed privately with no other observers present.

Informed sources said the team agreed to soften its terms for the sake of seeing all the captives and of reporting on their conditions. If the captors did honor their earlier promise to allow the team to see all the hostages — of whom there are presumed to be 50 — it would mark the first time that has been done by independent foreign observers since the embassy was seized last Nov. 4.

A spokesman for the militants said tonight that the Red Cross team had seen all the hostages, but he would not specify exactly under what conditions the visit took place.

Other Visitors

Also visiting the embassy today, on the invitation of the militants, were Health Minister Musa Zargar; Hojatoleslam Mohammed Ali Khamenei, a religious leader; and a doctor of the Red Lion and Sun Society, Iran's equivalent of the Red Cross.

Meanwhile, four ambassadors of European Economic Community countries left today, following a collective decision to recall EEC envoys to protest a lack of progress on the hostage issue. The envoys of four other EEC countries represented in Tehran, along with Japan's, are to depart this week.

Diplomatic sources in Tehran said they hoped the visit to the embassy would clear up a mystery about the fate of several hostages denounced by their captors as spies and believed to be held in solitary confinement.

Among them are said to be William Daugherty, Malcolm Kalp, Thomas Ahern and Michael Metrinko. An embassy political officer and former political consul in the northwestern Iranian city of Tabriz, Mr. Metrinko is the only captive who has not been reported seen by neutral outsiders or heard from by his family.

Flexible

Before the visit, a senior Red Cross official said: "Under the circumstances, some of the conditions may have to be flexible, but we have set conditions." The sources said the Red Cross insisted on seeing all the hostages and that the militants softened some of their own terms, notably that there be no accounting of the hostages and that their names not be reported.

IOC Proposal Reported To Ban Flags, Anthems

(Continued from Page 1)

The IOC sources said they are pessimistic about the chances that Western countries will attend the Games in the wake of the escalating pressure that Mr. Carter is exerting on U.S. allies to boycott the Games because of the Afghanistan situation.

"If West Germany refuses to go, France's position will be delicate," said Maurice Herzog of France, an IOC member. "If there are only socialist countries in Moscow, I don't see any interest in France going there."

Individual Entries

Sir Denis Follows, chairman of the British Olympic Association, said: "We're disappointed the Americans aren't going. It devalues the value of gold medals, because they [Americans] have always made a considerable contribution. But we have made our decision and it stands."

Primo Nebioli, vice president of the Italian Olympic Committee, described the USOC boycott vote as "a blow to sport," a sentiment echoed by Kurt Moeller, chairman of the Danish Olympic Committee.

Sweden and Finland said they will not change their decisions to send teams to Moscow.

They added that the meeting will also discuss the feasibility of allowing athletes to enter the Games individually if their committees decide to boycott. But no decision on that is likely before the May 24 closing date for entries, they said.

Several IOC members, as well as national Olympic committees and international federations, are known to favor the dropping of flags and anthems, but the sources said the Russians are opposing the idea.

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Polls Reflect Impatience in U.S.

Carter Campaign Staff Wary of Iran Factor

By Martin Schram

WASHINGTON, April 14 (UPI) — A half-mile from the White House, in a low-rent district, one of President Carter's senior campaign advisers is warning about the Iranian factor.

"There's a tremendous impatience across the country now because of Iran," said Tim Kraft, a senior campaign adviser and head of the Carter-Mondale campaign headquarters. "Mr. Kraft is the campaign's political director, and he is worried about the April 22 Pennsylvania primary. Right now, things are not going well."

The president's pollster, Patrick Caddell, has just done a survey showing that Sen. Edward Kennedy leads Mr. Carter in Pennsylvania by 55 percent to 40 percent. Two weeks ago, Mr. Carter held a commanding 12-point lead, according to a Gallup survey — but that was before the latest hope of freeing the hostages in Iran had collapsed.

"The political effect [of the crisis] is dire and unpredictable," Mr. Kraft said. "We know it can't help but hurt the question is how much it will hurt."

With today's frustration, patience is not really a virtue anymore.

The country's frustration threatened to have been reached on Wednesday, which happened to be April 14 — the day when the president's campaign hopes up the down the road one more time. In an extraordinary 7 a.m. press conference at the White House Oval Office, Mr. Carter declared that there were positive signs coming out of Iran.

There has, in fact, been such progress, but the lesson of Iran has been that nothing is sure until it happens — and perhaps not even then.

Mr. Carter's effectiveness proved to be painfully premature. Ayatollah Ruhollah Khomeini, who had hoped that the hostages would be removed from the control of their militant captors.

The country's inflated expectations quickly fell — and the polls, which had already begun to turn against Mr. Carter on his handling of Iran, show signs of plummeting.

Louis Harris, first into the field,

seemed to capture public frustration in a survey worth noting despite the obvious foreshadowing of his questions. Just after Mr. Carter broke relations with and invoked sanctions on Iran, the pollster tested public response to the statement "What President Carter is doing is too little and too late and not enough."

Seventy-one percent agreed that "Up to now, the United States has been at the mercy of the ayatollah, who has made us look weak and

helpless." And a whopping 77 percent agreed that "It was a big mistake not to give Iran an ultimatum in the first 72 hours after the hostages were seized."

In January and early February, the president's policy of patience and negotiation to free the hostages had the solid support of the U.S. people, according to the polls. But by March that support had begun to slip. And the latest developments in Iran will surely make the president's political problems worse, his campaign strategists concede.

Kennedy Is Still Hopeful, But Carter Widens Lead

NEW YORK, April 14 (AP) — Sen. Edward Kennedy, D-Mass., claims his weekend victory in Arizona caucuses has given him hope, but in party meetings in three other states President Carter has found further reason to think he will have the Democratic presidential nomination.

In fact, the weekend's delegate selections in South Carolina, Virginia and Washington added to the president's margin over Sen. Kennedy despite the senator's showing in Arizona and the likelihood of similar results in Alaska.

But Sen. Kennedy saw his Arizona victory — he seemed assured of gaining 16 of the state's 29 delegates to the party's national convention — as leading to a triumph in Pennsylvania, where 185 delegates are at stake in the primary April 22.

"The Southwest has spoken," Sen. Kennedy said yesterday. "The Northeast has spoken," he added, referring to his earlier victories in New York and Connecticut. "The next state is Pennsylvania. We're hopeful of getting a similar response."

But presidential aides had little to complain about overall from the weekend's Democratic political meetings. Counting South Carolina, Mr. Carter had 921 of the 1,666 delegate votes needed for nomination. Sen. Kennedy had 458.

At various stages in the complicated process of choosing convention delegates, the weekend's Democratic meetings broke down this way:

- Arizona: With 74 precinct cau-

causes reporting, Sen. Kennedy had 55 percent of the vote to Mr. Carter's 45. That would give Sen. Kennedy 16 delegates and Mr. Carter 13, but state party officials said late returns from eight rural precincts could make the final breakdown 17-12 in favor of Sen. Kennedy.

• South Carolina: Mr. Carter won 34 delegates and Sen. Kennedy won 1. Two delegates were uncommitted.

• Washington: Party officials said weekend conventions in the state's four largest counties should give Mr. Carter a 2-to-1 margin over Sen. Kennedy, equaling his margin in Washington's March 11 precinct caucuses. That would give Mr. Carter at least 29 of 57 delegates, with as many as 14 going to Sen. Kennedy and another 14 remaining uncommitted.

• Virginia: In conventions in 5 of the state's 10 congressional districts, Mr. Carter gained 21 delegates and Sen. Kennedy 2. Another 21 will be chosen later in the other districts, and 14 will be elected at a state convention.

• Alaska: With results in from 13 of 19 district conventions, Kennedy supporters claimed 47 1/2 of the 289 delegates being selected for the state convention next month. Mr. Carter's forces picked up 17 seats, and 107 1/2 went to uncommitted delegates. Three of the 22 districts did not convene. The state convention will choose 18 delegates, who will cast Alaska's 11 votes at the national convention.

Iran has always meant more to Mr. Carter's political fortunes than just the handling of one crisis. It has come to stand for a posture of leadership in trying times, a mix of patience and strength. And — enhanced by the hard-line nature of the U.S. response to the Soviet intervention in Afghanistan — it supplanted public concern over the disastrous turn of the Carter economy.

New Wave

But the new wave of frustration threatens all that. Just before the Wisconsin primary, Mr. Caddell noted "a significant upward movement" in the percentage of people agreeing with the statement that "Carter cannot handle the presidency" — and the pollster believed that was directly related to increased frustration with the president's efforts to end the Iranian crisis.

State Democratic chairmen are starting to sound alarms. While all of them were saying last December that Mr. Carter was being helped by the crisis in Iran, half of them now are saying the crisis is hurting him politically, according to an ABC News survey.

The chairmen are not yet doubting that Mr. Carter will again be their party's presidential nominee. But they are having increasing doubts about his ability to defeat the Republican front-runner, Ronald Reagan.

Last week, 25 chairmen said they believed Mr. Carter would carry their states, and 18 thought Mr. Reagan would. Two weeks earlier, 32 named Mr. Carter and 12 picked Mr. Reagan.

Hard-Line Arabs Consider Cutoff Of Oil to U.S.

BEIRUT, April 14 (UPI) — A potential oil and natural gas embargo against the United States and stricter economic sanctions against Egypt are dominating talks at a meeting of hard-line Arabs in Tripoli, newspapers here said today.

The meeting of the Arab Steadfastness and Confrontation Front, attended by the presidents of Libya, Algeria, Syria, Southern Yemen and the Palestine Liberation Organization, opened in the Libyan capital yesterday.

The oil embargo was proposed by Col. Muammar Qadhafi, the Libyan leader, who said President Carter "is naive if he thinks the Camp David comedy would settle the Arab-Israeli conflict. Carter only knows how to grow peanuts and cows."

Col. Qadhafi was quoted as saying: "The Libyan and Algerian people have to sacrifice their incomes from oil sales to the United States and Europe, because this oil is later sent to the Zionist enemy." The Arab states have already broken diplomatic and economic ties with Cairo to protest the Egyptian-Israeli peace treaty.

About 5 percent of Libya's oil goes to the United States, as does about half of Algeria's daily production of 1.2 million barrels. By comparison, about 20 percent of the 9.5-million-barrel daily output of Saudi Arabia, which is not a front member, is used by the United States.

Seoul Appoints Director of KCIA

SEOUL, April 14 (AP-DJ) — Lt. Gen. Chun Doo-hwan, the commander of the Defense Security Command, who is considered the real power in the South Korean military, was given the additional post today of chief of the Korean Central Intelligence Agency.

He will be responsible for internal security and political surveillance as well as military security. A brief government announcement said that President Choi Kyu Hah appointed Gen. Chun as acting director of the intelligence agency. This was because the KCIA director may not legally hold another government job, a government spokesman said.



WATER LINE — A man tries to get his waterlogged car moving in a residential area near central New Orleans after heavy rains brought flooding in a wide area of Louisiana.

Copy Machine Chemical Could Be Cancer-Causing

By Victor Cohn

WASHINGTON, April 14 (UPI) — A chemical in many office copying machines could prove to be a cancer hazard to those heavily exposed over long periods, University of Texas scientists have found.

All the evidence, so far, is based on laboratory tests, "and we need some animal data before we can say whether it's a problem or not," said Dr. Marvin Legator, the head of the Texas group.

Just the same, officials of Xerox Corp., one of the largest manufacturers of copying machines, said that the firm acted to reduce the amount of the suspected material in toning (darkening) chemicals sold since early last month.

Scientists in Dr. Legator's laboratory at the University of Texas Medical Branch, Galveston, called the chemical — nitrophenol — a potential carcinogen on the basis of tests in bacteria and in cultures of mouse cells.

No Human Health Hazard

Xerox officials said that they had found adverse effects in similar tests, but no human health hazard. They said that the chemical was a contaminant in the "carbon black" toner in copies, found at 10 to 15 parts per million in some toners.

Since its findings, Xerox said, the firm that supplies the chemical to it and other manufacturers have reduced the level to about 0.15 parts per million, which Xerox asserted is "an amount so small it's not precisely measurable."

Dr. Legator said that he sees no likely risk for someone using a copying machine occasionally. If current animal tests confirm the

laboratory results, he said, he would worry about persons who have worked all the time in confined copying areas.

Although the current toner has been improved, he said, that "may not be the end of the story," because carbon black toners contain other chemicals that need study.

Required by Law

Dr. Legator and an Environmental Protection Agency spokesman in Washington said that Xerox should have told EPA about its test results, as required by law if a potential hazard is identified. Xerox reported its results to a scientific meeting last month.

"We're concerned that the company didn't come to us with this information as soon as they had it," said Larry O'Neill, an EPA spokesman. "We don't even have the complete studies yet, just the abstracts. We've asked Xerox to submit them. Then we'll consider further tests."

Pope, in Turin, Links Violence To Consumerism

TURIN, April 14 (UPI) — Pope John Paul II, guarded by more than 2,000 troops and special police for a visit to a city beset by terrorism, said here yesterday that man's excessive consumerism and superficiality have made violence systemic.

In the first papal visit to Turin since that of Pope Pius VII in 1815, the pope rejected a bulletproof limousine, riding instead in his customary open jeep through streets lined by more than 1 million people.

Under otherwise extremely tight security, the pontiff said: "Men kill in homes, in offices, in universities. It is necessary to kill other men to change and better man and society... then we have arrived at the point of canceling out man himself."

"Armed men of the modern armies kill the defenseless and innocent," he told crowds that came to hear him say Mass. "Incidents of this type have happened before, but today it has become a system. Countries of great technical progress and well-being foster what is usually called consumerism."

In the past two years, terrorists have killed 14 persons in Turin and wounded dozens of others, many of them industry or union leaders. The city has also been the site of brutal terrorist attacks on teachers and students.

Chess Victory in Russia

MOSCOW, April 14 (AP) — A draw on the 34th move during Saturday's match in the city of Alma-Ata gave Lev Polugaevsky a 5 1/2-2 1/2 victory over fellow Soviet grandmaster Mikhail Tal and advanced him to the semifinals in the world chess championships. Tass reported.

U.S. Says It Plans to Admit Up to 3,500 Cuba Refugees

From Agency Dispatches

WASHINGTON, April 14 — The United States will admit up to 3,500 of the Cuban refugees who have fled to the Peruvian Embassy in Havana seeking political asylum, the White House said today.

The number represents almost a third of the 10,800 Cubans who have been at the embassy for more than a week.

Jody Powell, the White House press secretary, welcomed a Costa Rican offer to serve as a staging area for the transfer of the refugees to other countries.

He also called on the Cuban government to cooperate with Peru and with international relief organizations to permit a "prompt, safe and peaceful" exodus from the island.

Mr. Powell characterized the U.S. offer as a fair and humane response to the problem. He said that the administration expected other countries to do their share.

4,000 Get Passports

Agence France-Presse reported today from the Cuban capital that about 4,000 refugees in the embassy had been given passports and safe-conduct passes by the Cuban government and had returned to their homes to await evacuation.

Three other countries have made commitments to receive specific numbers of refugees. Peru will take 1,000, Spain will admit 500 and Costa Rica will receive 300.

Other U.S. officials, who asked not to be identified, said that the United States would give priority to receiving Cuban political prisoners, then to Cubans with family members in the United States and to Cubans who have a "well-grounded fear of political persecution."

The officials said that U.S. representatives would be sent to Costa Rica to screen potential Cuban immigrants. After this process begins, they said, it will take eight or nine days before the first Cubans arrive in the United States.

Encampment in Peru

Mr. Powell said that 800,000 Cuban refugees have been admitted to the United States since Fidel Castro assumed power 21 years ago. These include 3,900 political prisoners who have been released during the last one-and-a-half years and who were granted permission to enter the United States with family members.

When the first 500 Cuban refugees arrive in Lima from their encampment in the embassy grounds in Havana, probably tomorrow, they will be taken immediately to a 69-acre park near the center of Lima where the Peruvian Red Cross has completed preparations to receive and care for them.

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Co-Conspirator, Columnist Were Targets

Liddy, in Book, Tells of 2 Murder Plots

NEW YORK, April 14 (NYT) — The former White House press secretary, who was a co-conspirator in the 1972 Watergate break-in, has broken his long silence to tell of two alleged plots to kill President Richard M. Nixon.

Mr. Liddy, who described the alleged plots in his book "The President Is Dead," a memoir of his time in the White House, said that he and Howard Hunt, a fellow co-conspirator, and Jack Anderson, the famous newspaper columnist, were the targets of the plots.

In addition, excerpts from the book, which is published by St. Martin's Press, also gives Liddy a detailed account of the break-in at the Democratic National Committee headquarters in Washington, D.C., and the subsequent cover-up.

Mr. Liddy, who refused to plea-bargain with prosecutors, served 52 months in prison, longer than any of the 23 Watergate defendants, and was paroled in September, 1974.

Mr. Liddy, who refused to plea-bargain with prosecutors, served 52 months in prison, longer than any of the 23 Watergate defendants, and was paroled in September, 1974.

Central African Republic Severed Soviet Links, Phone Book Shows

MOSCOW, April 14 (NYT) — In a move never before public by Moscow, the Central African Republic broke diplomatic relations with the Soviet Union on Jan. 22, it has been learned here.

The break is apparently one of the better-kept diplomatic secrets of recent months. First public mention of it came in the latest edition of a telephone directory put out for the foreign community in Moscow by Victor Louis, a Soviet journalist who often contributes to Western publications, and his wife, Jennifer.

"Delete Central African Embassy on p. 160," the directory says.

The Soviet Foreign Ministry had no comment about what had happened to the embassy, although an official did say that no phones were being answered in the building. Soviet sources said the embassy left behind a limousine to pay off its debts.

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Some Signs of Support

Despite the confusion over whether President Carter set a deadline for the allies to break relations with Iran, there have been some promising developments in recent days. The U.S. Olympic Committee has voted 2-1 against going to the Moscow Games, the Carter administration is showing signs of implementing a coordinated economic, political and military policy on Iran and Afghanistan, and Chancellor Helmut Schmidt has hinted he might go a bit further toward supporting sanctions against Iran than has been suggested.

The U.S. Olympic Committee's vote was crucial. If President Carter had proved unable to persuade his own country's Olympic establishment to boycott the Games, there was virtually no hope that the Olympic organizations of other countries would vote to stay away. Now it seems possible that committees in countries such as Canada, Australia and West Germany will decide against sending teams. If they do, Bonn's Common Market partners could be swayed and the United States would not be isolated. Much credit for the U.S. committee's vote goes to former Treasury Secretary William Simon, a Ronald Reagan supporter, who told the delegates: "This is a moral choice we have to make. When the president of the United States makes a determination on national security, there is no way he can be denied."

On Iran, the United States has finally begun to elaborate a policy with direction. President Carter, in an interview with four European correspondents, made clear for the first time that his chief priority is "what is best for our nation and its security," not the hostages' lives. He told the allies that if diplomatic and economic measures did not yield results in a few weeks, military options would be considered. At the same time, the United States has asked the NATO countries to prepare to take up the slack in Western Europe if U.S. forces are needed in the Gulf; and it is about to ask Japan to increase its defense preparedness.

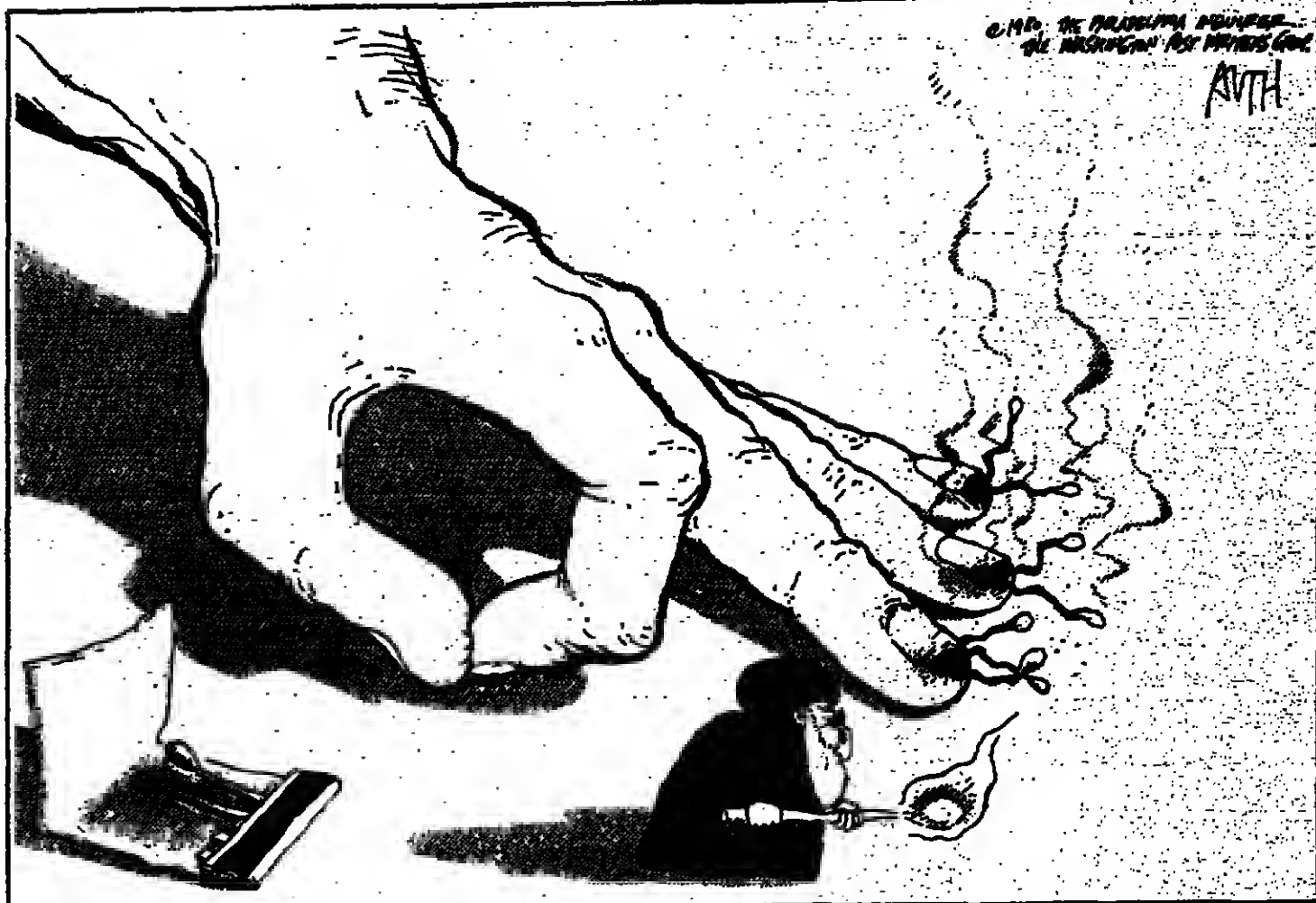
These moves, if supported by Western Eu-

rope and Japan, should send the right message to the Russians — the United States and its allies will act together to support their vital interests. Without allied support, the Soviet Union will continue to take advantage of Western divisiveness. In recent days, the Red Army has increased its presence in Afghanistan by 20,000 to 30,000 men. Nothing in the Western response so far has suggested that the Soviet Union would have to pay a price for increased aggression. With a show of unity now, it might not be too late to change that perception.

Timing, as in all acute situations, is important. President Carter seems to have suggested mid-May as the time for allied governments to sever relations with Iran if no progress has been made toward freeing the hostages. Another key date is April 21, when Common Market foreign ministers are scheduled to meet. The United States is hoping that support for sanctions proposed at the United Nations, but not implemented because of a Soviet veto, might be agreed to then. If those dates are permitted to pass without any action, the slight momentum that appears to be building could be lost. Unfortunately, judging from French press reports, efforts to keep Western consultations from exploding into public arguments, seem unlikely to succeed. As a result, another opportunity to forge a unified position may be missed.

Chancellor Schmidt, in what may be little more than an effort to forestall a crisis with the United States in a West German election year, has emphasized the uncertainty of the current situation and its similarities to pre-World War I Europe. He has suggested that West Germany might consider some sanctions even if the rest of the EEC does not go along. Mr. Schmidt is on record as opposing military action in Iran and he may believe that an expression of Bonn's support will avoid or at least delay it. Whatever his reasons, at least his responses have been discreet and diplomatic.

INTERNATIONAL HERALD TRIBUNE.



Where U.S. Erred on the Hostages

By William Pfaff

PARIS — Political civilization is fragile, a matter of accord among enemies, acceptance of certain ways of acting, of convention, of unenforced law. Justice is depersonalized, blinded, in civilized societies. This has been a great achievement — as Frederick Main put it — to move from status to contract in the determination of justice. Rank no longer dominates. No one is outside the law.

The conventions are fewer in international relations. The laws are fewer yet. For that reason, civilization is more vulnerable. Thus the crucial damage done by the Iran hostages affair is not to U.S. prestige or influence, but to the system that makes it possible for states to get along with one another — and the worst of the damage has been inflicted by the U.S. government itself.

U.S. Suffers Most

By agreeing to negotiate over custody of the hostages, conceding conditions for their release, and offering concessions to their captors, the United States validated kidnapping diplomats as a method for dealing with the U.S. government. It will be the United States that suffers most from this in the future, but others will be hurt as well because the structure of diplomatic convention and international negotiation has been injured.

Of course, it is easy to see why Washington took the course it did. The alternatives were few and unappealing. The survival of the hostages seemed most important, and at the start, last November and December, no one could be sure that the people holding the U.S. Embassy might not simply murder the Americans if they were defied or provoked.

A struggle for power was going on in Tehran; the Russians were on the move in Afghanistan and ready to exploit America's trouble in Iran. So Washington negotiated with whomever could be found who seemed to have a say in Tehran, and tried, by moderation and concessions, to help into power people like Abolhassan Bani-Sadr and Sadegh Ghotbzadeh, with whom it was possible to have rational conversation.

Error

But this was the fundamental error. To begin with, it did Bani-Sadr and Ghotbzadeh no good. U.S. support is no asset to an Iranian fighting for power. But it also subordinated the objective interest and legal claims of the United States to the internal political process of Iran.

It was true that the internal power struggle would in fact decide what happened to the hostages. Nonetheless, that struggle is the affair of the Iranians. The principle that had to be maintained, but was abandoned by the United States, was that Iran's international obligations are not contingent upon who holds office in that country.

The United States acquiesced in the notions that the Iranian government needed to negotiate with the students over custody of the hostages, that the United Nations should investigate the affair as a preliminary to release of the diplomats, and that the Iranian parliament should eventually vote on the matter. Once the United States did these things, agreeing to wait upon various conditions to be fulfilled, it ceded its right to have international law fully obeyed. It abdicated its claim; and while now it attempts to reassert it, a vital principle has been abandoned.

A responsible concern for law and precedent was a factor behind the U.S. decision not to deal with the Iranians fit for it. The Iranian Embassy in Washington could have been ransacked last November —

there were plenty of Americans ready to do it — and its diplomats seized. Tehran, or Iran's ports or oil fields, could have been raided or bombed. The Nixon or Johnson administrations might well have done that. The Carter Administration refused to add to the illegality. Things were bad enough.

But I do not understand why former Ambassador George Kennan's plan of action was not taken more seriously. He said to Congress that the seizure of diplomats, when it obviously has the complicity of a government, as in Iran's case, is an act of war.

This state of war, initiated by Iran, should have been formally acknowledged by the U.S. government, which then, in compliance with international law, could have interned Iran's diplomats and Iranian

nationals in the United States for eventual exchange for the Americans in Iran. This is what ordinarily happens when governments declare war. The proposal seems a principled, pacific, legal response, with — as the mathematicians say — a certain elegance as well. But it seems not to have interested Washington.

Terrorism

What Washington actually did contributed to what it wanted to avert. It contributed to a disquieting breakdown of international legality that has marked recent years. Terrorism, the violation of diplomatic privilege and convention, undisciplined warfare, clandestine warfare, torture, — all these desperately weaken the political civilization we possess, and which was very costly to construct.

Castro's Praetorian Guard

By William Safire

MIAMI — As it turns out, the smartest move the Russians made in 1979 was in refusing to give an inch when President Carter called the presence of a Soviet combat brigade in Cuba "unacceptable."

Not only did Kremlin leaders discover that the United States was not prepared to back up its stern warnings, which encouraged them to move into Afghanistan and recently to neutralize Pakistan: The success of their nose-thumbing at the U.S. president made the presence of their troops in Cuba infinitely more effective.

Why are those Soviet troops there? At Carter scrambled back to make the unacceptable seem acceptable, the reason was put forward that they were essentially in Cuba to train Cubans, a mission we did not like but did not consider dangerous.

'Big Ear'

Two other reasons were advanced by those of us who were afflicted with what was then said to be an inordinate fear of Communism. One was that the Russians did not fully trust the Cubans to guard their "big ear," an extensive electronic spying system based in Cuba to intercept U.S. telephone and data-transmission communications. That suspicion was well-founded: Invasion of U.S. privacy for Soviet intelligence purposes is proceeding apace.

The other reason, which I did not realize was so important at that time, was to provide Castro with a Praetorian Guard — recalling those cohorts of elite troops providing a

bodyguard to Roman emperors in the centuries between Augustus and Constantine, which came to have much to do with the making of emperors.

Now it seems that Castro and the Soviets needed those forces in place in Cuba more than any of us suspected. The presence of the Red Army near Havana may be an important support to the Castro regime, and a vital part of the Soviet plan to penetrate Central America.

The most startling evidence to date of internal discontent with the Castro dictatorship came this month when Cuban police were removed from their posts in front of the Embassy of Peru in Havana.

A Lesson

Castro had intended to teach the Peruvians a lesson for harboring a busload of Cubans whose crash through the gates to the safety of the embassy resulted in the death of a guard.

Some lesson. No bigger mistake has been made by Communists since their walkout from the Security Council permitted the United States to defend South Korea under a UN mandate. When word spread in Havana that the gates to the Peruvian grounds were unguarded, more than 10,000 Cuban men, women and children swarmed in — seeking asylum and a way out of political repression and economic depression.

Crowded and exposed in conditions intolerable to any but those fleeing tyranny, these Cubans voted with their feet, sending a clear signal to the world — after 20 years — that the Castro revolution is failing.

Castro has all sorts of excuses. He cites syphilis, fever, tobacco blights and sugar cane rot. But the real light and rot comes from his abhorrent export policy: Cuba sells tens of thousands of its tons to Russia for \$3 billion per year.

If economic, and perhaps political, discontent is so widespread — why is there no band of guerrillas operating in the mountains, early-Castro style? Chaviano feeds no empty bolshies. One answer is the stark that the ruling class — the army — has in the regime. Another is the confidence Castro's cadres have in the presence of Soviet forces on the scene, with thousands more available when needed. Should Castro weaken, the Russians will send no "Haynes Mission," to throw him out and keep the army from fighting his enemies, as Carter did in Iran.

By putting its soldiers in the Americas, and by scoffing at the Russian served notice to other revolutions that Praetorian Guards may be available to them.

In years to come, we can expect the Sandinistas of Nicaragua — who, we were assured by the Carter State Department, were the non-Communist "force of change" to be sided to invite Soviet advisers, and then to bring in new Soviet combat brigades (A Nicaraguan delegation in Moscow has just hailed "the inalienable right of the people of Afghanistan to follow the road of progressive change," in El Salvador and Guatemala, Castro encouraged revolutionaries know that once they progressive change their way in, they will have powerful friends preventing them from being dislodged by their own people.

That is why the next president of the United States must let the Russians know that their military presence in the U.S. sphere of influence is intolerable, and that no improvement of relations is possible until their Praetorian Guard goes home. The United States may be geographically disadvantaged in the Gulf, but the Soviet Union is a long way from the Caribbean.

The next president will have the benefit of 10,000 Cuban voices telling other Latin Americans what life is really like under a Communist dictatorship. Castro's economic distress is democracy's opportunity in this hemisphere: What is needed is a refusal to accept the unacceptable, and a willingness to come to grips with more than one foreign policy ax at a time.

THOMAS E. LOLLINI.

ALFRED E. DAVIDSON.
Paris.

Estonian Dissident

Readers who saw my article about Mart Niklus, the Estonian dissident (JHT, March 1-2), will be interested to know that he was arrested by the KGB on March 19. The charge was resisting the authorities.

As Niklus is a notably peaceful man, it is far likelier that the Russians have begun their pre-Olympics sweep, silencing dissenting voices by exile or arrest. Niklus, who knew it was coming, had ap-

The International Herald Tribune welcomes letters from readers. Short letters have a better chance of being published. All letters are subject to condensation for space reasons. Anonymous letters will not be considered for publication. Writers may request that their letters be signed only with initials but preference will be given to those fully signed and bearing the writer's complete address. The Herald Tribune cannot acknowledge letters sent to the editor.

Is Begin Going by The Book?

By Joseph Kraft

JERUSALEM — "We shall begin the book with us," Menachem Begin told me in an interview on the eve of his departure for Washington with Jimmy Carter this week. "The book," he has in mind is not the Bible. It is the complete record of the Camp David talks that led to the Israeli-Palestinian peace treaty. Begin believes that all the difficulties which have recurred since the treaty were not foreseen in the original Camp David accord. He thinks that by going back to the original Camp David accord, he can move the peace process forward and end the present process of forward and backward steps.

The list of "deviations" compiled by Begin starts with the "main principle" of the Palestinian autonomy on the Israeli-occupied territory west of the Jordan River and in the Gaza Strip. Begin claims the Camp David accord provided that a one and the same Palestinian authority shall have only one real power — administrative, judicial and police. He says the Egyptians are now planning to establish a legislative council, which would name an executive and a judiciary. He rejects that as a "deviation" from the original Camp David accord.

Jewish settlements on the West Bank comes next on the list of "deviations." Begin points out that the Camp David accord does not mention settlements, and he says the solidarity with the Jewish settlements in Israel. He says the agreement is not a "peace treaty" but a "framework for peace." He insists that the U.S. pressure not to sign the Camp David accord is a "deviation" from the original Camp David accord.

Jerusalem is the final point on the list. Begin points out that the Camp David accord does not mention Jerusalem, and he says the U.S. pressure not to sign the Camp David accord is a "deviation" from the original Camp David accord. He says the agreement is not a "peace treaty" but a "framework for peace." He insists that the U.S. pressure not to sign the Camp David accord is a "deviation" from the original Camp David accord.

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No Major Shifts Expected

Schmidt-Strauss Campaign Lacking Ideological Clash

By John Vinocur

BONN (NYT) — The West German election campaign, with Chancellor Helmut Schmidt seeking another term against Franz Josef Strauss, is nine months old, but the great debate, the ideological clash of liberal and conservative ideas that many expected, has not taken place.

With voting set for Oct. 5, there is a developing realization that a genuine confrontation between two great political intellects will not happen. Although hard campaigning does not begin officially until after the summer vacation, party lines appear sufficiently well drawn to eliminate the chance of far-reaching shifts.

Foreign policy has become the main issue since the Soviet intervention in Afghanistan. Although the differences between Mr. Schmidt, a Social Democrat, and Mr. Strauss, the spokesman of the Christian Democratic opposition, are substantial in tone and phrasing, they appear narrow in real terms.

Mr. Schmidt said recently his challenger had essentially aligned himself with the government's position. "If you analyze carefully what he's said," the chancellor remarked, "then it's very hard to find any basic differences."

No Plans

That was the case during a week of debate, accusation and counteraccusation, how West Germany should demonstrate its solidarity with the United States after Iran. Almost a year after President Carter's announcement of new sanctions, neither Mr. Schmidt nor Mr. Strauss had offered a detailed, practical plan for assistance to the country.

In the longer term, the foreign policy issue has essentially boiled down to the extent to which West Germany is ready to question the Soviet Union's move into Afghanistan and to support U.S. initiatives.

Neither is willing to call for a limitation of West German trade with the Soviet Union, although the Christian Democrats support an examination and possible expansion of the list of goods to be embargoed.

Foreign policy has become an issue in which Mr. Strauss suggests that Mr. Schmidt, because of the leftist Jewish lobby, is not free to act.

Neither the editorial nor the directive indicated what kinds of secrets had been spilled, but it is understood that party leaders were concerned about the leak last January of a report delivered by Deputy Premier Deng Xiaoping to Communist Party faithful at the Great Hall of the People.

The report, which denounced China's human rights movement and called for a constitutional amendment to eliminate the people's right to put up wall posters, has never officially been published.

Other recent leaks, all apparently coming from the highest levels of the party, have dealt with Mr. Deng's plans to step down from his government post later this year and the government's efforts to bring the disgraced Gang of Four to trial.

Only last week, Cheng Ming, a Hong Kong magazine with close ties to Peking, quoted an internal party document that authorized a public trial for all the ousted radicals except Jiang Qing, Mao's widow, who will be tried separately and secretly.

The espionage law published Friday went into effect in 1951, the newspaper said, but fell into disuse during the Cultural Revolution of 1966-1976 and had been forgotten.

But after re-examining the old law, authorities found it still suitable.

Under the law, state secrets to be safeguarded include all defense and military matters, the government's financial plans, budget and trade developments, the details of economic construction, judicial proceedings, and scientific discoveries.

The director-general of the Defense Agency, Enji Kubota, resigned under pressure in early February, taking the blame for the first espionage case in the country involving officers of the self-defense force.

Japanese Jailed for Soviet Spies

Tokyo, April 14 (UPI) — A re-

major general and two junior officers of the Japanese military passed military secrets to the Soviet Union were sentenced today to prison terms ranging from eight to 10 years.

A Tokyo district judge, Hideo Yamaguchi, imposed a one-year sentence for Gen. Yukihisa Miyazawa, 54, and an eight-month sentence for Lt. Eichi Kashii, 45, and Warrant Officer Tsumetoshi Oshima, 49.

In September, 1979, Warrant Officer Oshima passed classified documents to Gen. Miyazawa, who gave the information to a Soviet spy net.

Gen. Miyazawa and Lt. Kashii were also accused of conspiring to have Warrant Officer Oshima obtain secrets about the ground defense force (the army). They were arrested Jan. 18 and did not meet the charges.

Security officials said in January the secrets included data on these military installations, deployment along the Chinese-Soviet border and size and equipment of the Chinese Army and Air Force.

Investigators quoted the general as saying that he passed the secrets in effort to ease tensions between Moscow and Peking.

The director-general of the Defense Agency, Enji Kubota, resigned under pressure in early February, taking the blame for the first espionage case in the country involving officers of the self-defense force.



TROPICAL PARADISE — What a recipe for lunchtime bliss: flowers budding, the sun shining, temperatures around 70 Fahrenheit, and half an hour to spend in a riverside garden in one of Europe's warmest cities . . . London? Winds from the Mediterranean made the British capital a hot spot yesterday, with higher temperatures than Athens, Nice or Majorca.

24 Foreign Scientists Attend

Soviet Jews Hold Seminar Amid Pressure

By Dan Fisher

MOSCOW, April 14 (LAT) — Joe Liebowitz, a mathematical physicist from Rutgers University and immediate past president of the New York Academy of Sciences, sat hunched over a stack of old copies of Physical Review magazines in the front row.

He listened intently as Jacob Alpert, a 68-year-old Soviet Jewish colleague, stood no more than two feet away explaining in halting English a complicated electromagnetic wave formula.

As the obviously pleased Mr. Alpert concluded his brief presentation yesterday, Mr. Liebowitz and 60 other scientists who were jammed into a small room in a Moscow apartment applauded.

Despite what had appeared three days earlier to be a serious threat by Soviet authorities to break it up, the fourth International Conference on Collective Phenomena was under way.

Cutback in Exchanges

With the sharp cutback in East-West scientific exchanges that has followed the Soviet intervention in Afghanistan and the internal exile of Andrei Sakharov, the Nobel Prize-winning physicist, it seemed ironic that what was essentially a protest seminar had attracted the largest contingent of foreign scientists in its six-year history.

The collective phenomena conference is organized by Jewish scientists forbidden to work in their specialties in the Soviet Union because they have applied to emigrate. They are part of a larger group called refuseniks — Soviet citizens whose applications for exit visas have been repeatedly turned down.

Along with Mr. Liebowitz, three other U.S. citizens were among the 24 foreign scientists who showed up yesterday for the first session of the three-day conference. Scientists also came from France, Mexico, Britain, Norway and Sweden.

Visas Denied

The Russians refused to grant visas to some scientists, including seven more from the United States. The U.S. State Department reportedly considered an official protest but decided against it, allegedly because it might have jeopardized the refusenik sponsors.

"I came for a combination of scientific reasons, personal friendships developed during the last meeting and a general expression of support for these people," said Mr. Liebowitz. He added, however, that he thought it was important to keep some scientific contact with the Soviet Union alive despite the freeze in Soviet-U.S. relations.

Viktor Brailovsky, 44, a cyberneticist who is one of the Soviet Jewish organizers of the conference, said yesterday that the sessions "are events of great importance to us. They help us to survive as scientists under extremely difficult conditions."

Mr. Brailovsky, who is hosting the conference in his apartment, was picked up by police last Thursday and shown an order for his arrest for spreading anti-Soviet propaganda. The charge apparently stemmed from his involvement with an underground cultural magazine, Jews in the U.S.S.R.

Six hours after he was fingerprinted and put in an isolation cell at a district police station, however, Mr. Brailovsky was released and told that the arrest order, dated April 10, had been rescinded. He was warned to cancel the conference, he said.

By last Thursday, however, at least three foreign scientists were already in Moscow for the meeting, and the Soviet authorities apparently decided to let the conference go on.

Once they apply to emigrate, Mr. Brailovsky said, many Soviet Jewish scientists lose their jobs. "Even those Soviet Jews who keep their positions find themselves isolated professionally after applying," he said.

Most refusenik scientists try to keep working on their own. To keep from falling hopelessly behind in their fields, however, "we need to have persons with whom to discuss

Thai Ferry Sinks; 17 Die

BANGKOK, April 14 (Reuters) — At least 17 persons died when a crowded coastal ferry capsized off the Thai resort of Pattaya yesterday, police said. They said 11 passengers were missing and 48 were rescued.

Deplore Flaws in Food Relief

Vietnamese Criticize Rule in Cambodia

By Henry Kamm

PHNOM PENH (NYT) — Vietnam has established a strong hold over this enfeebled country, but Cambodia's weakness is causing it concern. Senior Vietnamese officials, in conversations here, indicated that Vietnam is worried by the possibility of another famine, and that it has only limited confidence in the competence of the Cambodian government of President Heng Samrin, which was installed in January, 1979, when the Vietnamese Army deposed the regime of Premier Pol Pot.

The Vietnamese said they shared the anxiety of international relief aides over the Heng Samrin government's inadequate sense of urgency and inefficient distribution of relief foods provided by the Soviet Union, Vietnam and the international community. "What we see here does not please us," a Vietnamese official said. "It could be catastrophic."

The Vietnamese concurred in the general view of Western aid organizations that the Cambodian administration is making inefficient use of the two ports of entry, Kompong Som and the river port at Phnom Penh, and of the 1,100 trucks provided by the outside world, and is less than competent in identifying areas of need and providing timely assistance.

An official said he shared the Westerners' view that a disproportionate amount of assistance is distributed in the capital, particularly to government officials. He said Cambodian government ministers are eating better than their Vietnamese counterparts in Hanoi, receiving as much as 22 pounds of meat a month. Meat is an especially rare commodity in Vietnam, and these days is hardly ever available to ordinary Cambodians.

The official said Vietnamese advisers in Phnom Penh had been suggesting to Cambodian officials to correct this imbalance. But the Vietnamese said they were hesitant to

Fire in U.S. Abates; Military Bomb Cited

STUMPY POINT, N.C., April 14 (AP) — Two small fires were all that was left early today of a five-day blaze, apparently caused by an errant Air Force practice bomb, that consumed more than 28,000 acres of woodland near here.

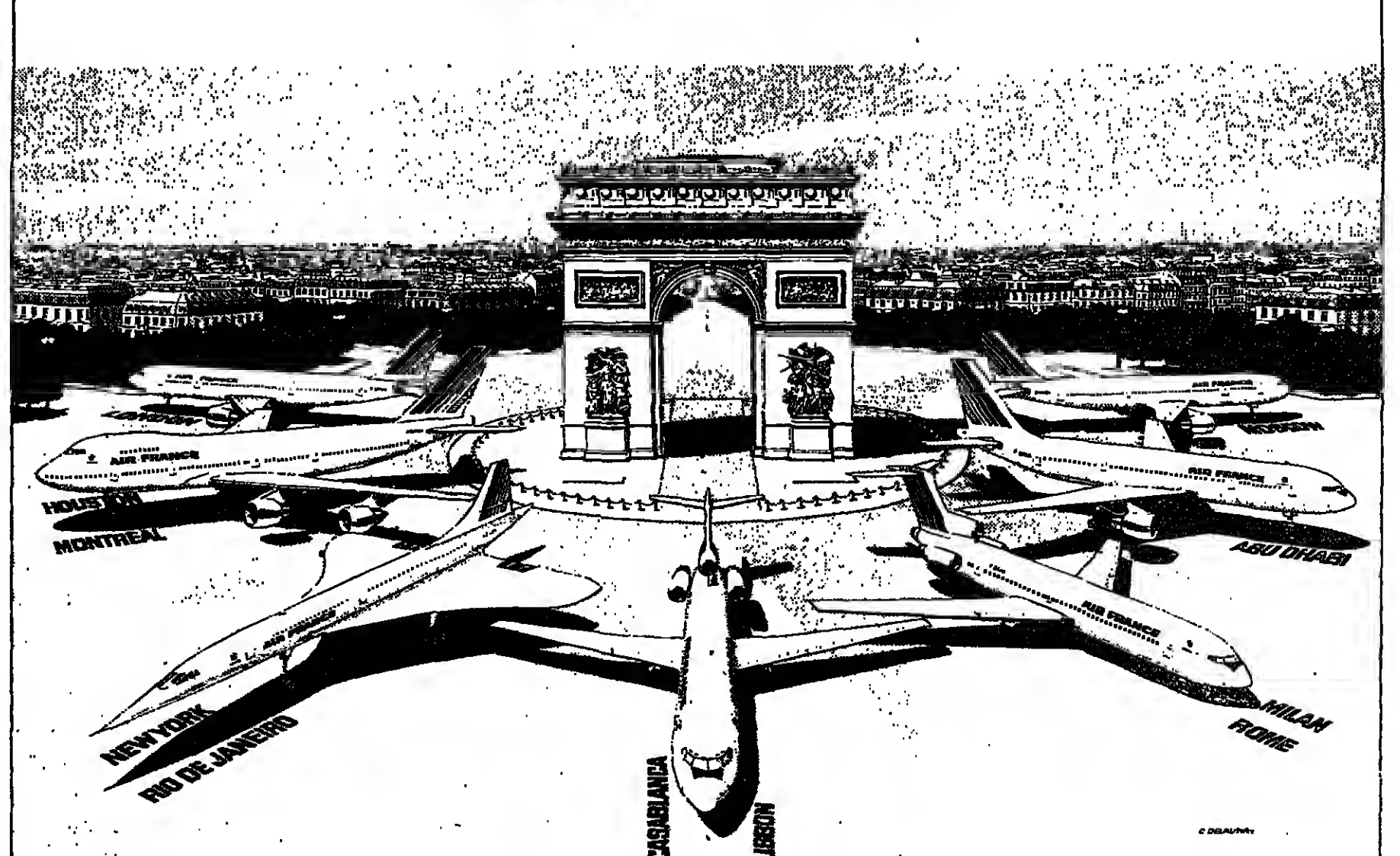
The fire in pine woods and marshland began Thursday, when an Air Force practice bomb fell on nearby military property, but far from the actual target area, authorities said. Forest service officials said the fire was the largest in the state since March, 1971, when a fire believed to have been started by another Air Force bomb burned 30,000 acres in the same area.

The Vietnamese officials showed full awareness of the ambiguous attitudes of the overwhelming majority of Cambodians, openly expressed to foreigners, to the heavy Vietnamese presence. Cambodians are grateful to Vietnam for having liberated them from Pol Pot and are fearful of a Vietnamese withdrawal while the threat of a return of the dreaded regime remains alive.

"That system was so atrocious that because of it Vietnam can stay here and work," a senior Vietnamese official said. "If we leave, it is Pol Pot."

But the Vietnamese said they knew that Cambodians had no natural affection for Vietnamese and would not welcome a heavy, long-term Vietnamese presence.

L'étoile.



In Paris, the crossroads of "la place de l'Etoile" lead to every corner of the city. Air France has an "Etoile" in Paris too... but ours leads to every corner of the world.

From anywhere in Europe, it is easy to come to Paris, and from there, Air France flies to 161 cities in 77 countries via one of the world's most modern and varied fleets. For example, we fly to the Americas exclusively aboard spacious B 747's and the supersonic Concorde. And we serve many of our European, African and Middle Eastern destinations with the comfortable new Airbus. But for all our different aircraft and all our destinations, there's one thing that never changes aboard Air France: our excellent in-flight service that makes every flight a pleasure.

You can see the whole world from Paris. And no one can show it to you the way Air France can.

AIR FRANCE
The best of France to all the world

NEWS BRIEFS

ment of Silverless Film
A photograph film that has been developed by Minnesota Mining & Printing, the company said, the new "silverless" film will be less expensive than silver film. It is a type of silverless film that uses another "metal" substance, said, but the company does not say what the substance is. It is not the type used in cameras by

ing Big Board

— Aihens-Busch will join the New York Stock Exchange with the symbol BUD. The company said it has switched to NYSE executive about the company whose counter since February, 1971. The company has subsidiaries that include the New York, as well as companies in container manufacturing and mail-making plus a major league baseball team.

Tin Prices

— The chairman of a United Nations international agreement to regulate tin trade fluctuations could be expected over the next few months. The agreement would set a price for tin that would be in line with the market. The agreement would replace a 1976 accord, said.

2.5 Billion in 1979

— The 42-nation Inter-American Development Bank said it approved a loan for economic development projects in Latin America for \$2.5 billion in 1979. The lending volume compared with \$2.1 billion in 1978. The bank said it approved a loan for economic development projects in Latin America for \$2.5 billion in 1979. The lending volume compared with \$2.1 billion in 1978.

Offshore Drilling

The Soviet Union and Japan today started to tap oil and natural gas in the sea off the coast of Japan. The officials had no comment on the Soviet and Japanese negotiators. The officials had no comment on the Soviet and Japanese negotiators.

Deficit in February

A provisional 1.26 trillion lire (about \$1.4 billion) deficit in February, 1979, Italy had a 345-trillion lire deficit in January, 1979.

Order for Thai Project

— Nippon Steel Corp. said it has won an order for a steel plant in Thailand, affiliated with Union Carbide Corp. The order is for a steel plant in Thailand, affiliated with Union Carbide Corp.

Gold Mine Stake

Chen S.A., a French subsidiary of the Silver Mines S.A., has sold its 44 percent interest in the Salsigne S.A., which operates France's largest gold mine, to a French company.

ear Accord on Plant

— Firestone Tire & Rubber said it has reached a tentative agreement with the United Rubber Workers Union on a new contract. The agreement is for a new contract with the United Rubber Workers Union.

ea Returns to Capital Market

South Korea might well have registered a zero or even minus growth rate this year, it is now expected to grow by 3 to 5 percent, said Premier Shin Hyon Hwak. The growth rate is expected to be 3 to 5 percent.

— The \$6.3 billion that South Korea plans to raise this year include \$3.6 billion in long-term funds, partly from the U.S. Export-Import Bank to finance nuclear power plant projects of the Westinghouse Electric Corp., and also syndicated loans for the Korea Development Bank. The Korea Development Bank is a major Korean bank.

any Reports

National Detroit			
1979	1978	1977	1976
Revenue	19.19	20.80	17.72
Profit	1.57	1.72	1.57
Net Income	17.44	19.20	16.15
Per Share	1.43	1.59	1.35

NCR			
1979	1978	1977	1976
Revenue	657.5	590.5	502.3
Profit	25.5	30.1	25.5
Net Income	25.5	30.1	25.5
Per Share	0.96	1.13	0.96

Owens Corning Fiberglass			
1979	1978	1977	1976
Revenue	579.3	502.3	415.6
Profit	18.9	32.3	21.7
Net Income	18.9	32.3	21.7
Per Share	0.62	1.06	0.62

United Telecommunications			
1979	1978	1977	1976
Revenue	482.4	415.6	350.0
Profit	41.37	44.76	30.1
Net Income	41.37	44.76	30.1
Per Share	0.58	0.64	0.43

Morgan Guaranty Finds Role of Corporate Lender Is Changing

By Steve Lohr

NEW YORK (NYT) — At 23 Wall Street stands a sober gray edifice that houses an immense purse of corporate America known as The Morgan Bank. It is a place where the financial world's most powerful men and women, both domestic and abroad, and first among them are the 200 largest corporations in the United States.

Peter Smith is a 45-year-old executive vice president of the Morgan Guaranty Trust Co. of New York, the country's fifth-largest bank. He is in charge of its corporate lending in the United States, and these days, he says, corporate lending is in a state of ferment.

This turbulence is the result of many factors. Some of them — the internationalization of financial systems, the development of the commercial paper and Eurodollar markets, and other structural shifts — have been gathering force for years.

More recently, the overriding feature of the financial markets has been the startling runup in interest rates. The prime rate reached an unprecedented 20 percent a little more than a week ago.

The soaring interest rates during the last 18 months, when combined with the structural changes in financial markets, have altered not only the methods but also the character of corporate lending — the give-and-take between the bank lending officers and executives at companies. Long-standing relationships between corporations and their traditional banks have frequently been cast aside, as corporate financial managers scramble for the cheapest interest rates around the globe.

The rules of the gentlemen's club gave way to the best deal the corporate treasurer could find. And the corporate executives were in command because, until recently, it had been a buyer's market for loans. Funds had been plentiful since 1976, even if the interest rates were high. Bank lending officers were the supplicants.

When bids came in for this job, the two lowest were from West Germany and Finland. Of U.S. firms, only Phelps Dodge and Anaconda bid. Neither was close to the West German and Finnish bids. Energy Department officials said.

Both ends of every coil will be held in place by enormous steel rings. Each 15,000-pound ring is being forged out of a superalloy, superhard steel called Inconel. All the rings are being made by the Japan Steel Co.

An Energy Department official said, "The Japanese were not only the lowest bidder, they were the only suppliers who could deliver these very special rings on the schedule at which we needed them."

One objective of this [Princeton] program was to train U.S. industry in the fabrication of major components, a potential supplier said. "But when you go out of the country for these components, you defeat that objective. All you're really doing is exporting the know-how."

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Japanese, W. Germans and Swiss Market High Technology in U.S.

By Thomas O'Toole

WASHINGTON, April 14 (WP) — Inflation and production problems have hit U.S. high technology so hard in the last two years that federal contractors have been forced to buy major components from foreign suppliers for the first time in decades.

In each case, the purchase was made at the end of a process that began with bids from suppliers and ended with the selection of a foreign supplier whose bid was so far below the lowest U.S. proposal that the "Buy America" rule on federal projects was waived.

The foreign purchases that have raised the most concern are a pair of orders placed with West Germany and Japan for the Princeton fusion project. One is for \$1.5 million worth of special steel from Japan, the other for \$1.6 million of extruded copper from West Germany.

Both will be used in making the largest magnets ever built. Twenty of the magnets will be placed in the tokamak reactor, which will be used to demonstrate the scientific feasibility of fusion.

The order placed to a West German firm called Kabel Metall is for 500,000 pounds of copper extruded into shapes 50 feet long, 6.5 inches wide and five-eighths of an inch thick.

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2d VW Plant in U.S. Seen As Boost for Car Industry

DETROIT, April 14 (AP) — Volkswagen's decision to build a second U.S. car assembly plant is being hailed here as a blessing to Michigan and the struggling U.S. auto industry, which has 205,000 workers on layoff during a massive sales slump.

"It means additional jobs at a time when we've got a severe unemployment crisis in the auto industry," a United Auto Workers union spokesman said in Detroit on Friday. "We think it sets an example that the Japanese auto companies ought to follow."

The supervisory board of the West German parent of Volkswagen of America Friday endorsed building a second plant. The carmaker's first U.S. factory is operating at capacity at New Stanton, Pa., with an layoffs — unlike the remaining four domestic manufacturers.

The word was good news for Michigan, where the state jobs rate was 11 percent in March, nearly twice the national rate of 6.2. The new plant would provide jobs for nearly 4,000 workers and pay almost \$20 million a year in taxes, said state Commerce Director William McLaughlin.

VW wants to locate its factory at the Army missile plant, being vacated by Vought Corp., which had used it for building missiles until its military contract expired.

Sterling Heights Mayor Anthony Dobry called the endorsement "something very good for the community — for the entire state of Michigan, not to mention states like Indiana and Ohio where supplier plants are located."

"Since we've made all of the moves to this point — and they've all been in the interest of getting Volkswagen to come to this state and this city — all we need is the transfer," he said.

The U.S. House last week approved legislation that would transfer title of the missile plant in Michigan's state-run Job Development Authority. It could then lease or sell the plant to Volkswagen. The Senate Armed Services Committee also has approved a virtually identical bill.

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Jamaica Is Indicative Bankers' Policies Stiffen On Third World Lending

By Ann Crittenden

NEW YORK, April 14 (NYT) — Last week's rejection by New York bankers of a plea from Jamaica for emergency relief is indicative of a stiffer attitude toward lending to developing countries that has been adopted by major banks.

Salomon Brothers, the investment banking house, issued a report last week ago on lending in less developed countries that one of its partners termed "the most negative we have ever released." He added: "We spent a lot of time here asking whether we really wanted to fan these flames again, but the issue is clearly that serious."

Bankers are openly nervous about the perennial topic of recycling, the lending of surplus funds deposited by members of the Organization of Petroleum Exporting Countries to the deficit-plagued developing countries.

In recent weeks at least half a dozen bank newsletters have warned that the commercial banking system, already heavily committed to developing countries, cannot continue financing the massive balance-of-payments deficits those nations are facing. With the exception of Citibank, which is still officially saying that the Third World debt situation is manageable, many major banks are forecasting problems.

Critical Situation
"Just because we got through the 1974-75 period all right doesn't mean we can make it this time," said Lawrence Brainard, head of international economic research at the Bankers Trust. "We are facing a critical situation."

One of the most influential pessimists is Rimmer De Vries, an economist at Morgan Guaranty Trust. An optimist who was proven right after the first oil-price increase was handled smoothly by the international economic system, Mr. De Vries warned in Morgan's latest Monthly Economic Letter that "the financing of the new imbalances —

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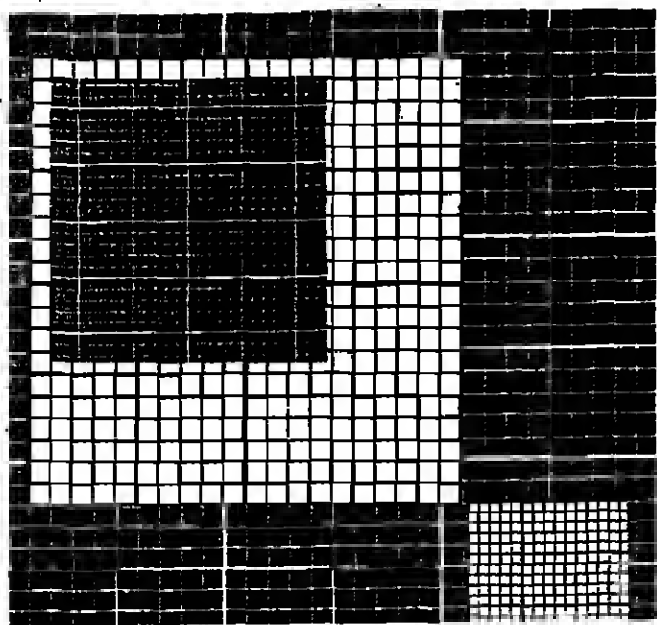
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21 Billion D-Marks Spent on R&D in '79

BONN (IHT) — More than 21 billion Deutsche marks were spent in the West German business sector on research and development last year, all but about 22 percent coming from the resources of private enterprise.

Industry employs about 190,000 skilled workers whose salaries amount to almost 60 percent of all expenditure. Only in Japan, among the major industrial countries, is the state contribution to such work lower than in the federal republic.

Expenditure on research and development has escalated since the mid-1960s. It increased almost fourfold in money terms between 1965 and 1977.

They were, in order of increased sales growth, chemicals (4.7 percent on R&D), the automotive industry (5.7 percent), instrument manufacture and optics (4.9 percent), engineering (3 percent) and electrical/electronics (6.4 percent).

Of the remaining two, crude oil processing is an industry dominated by transnational corporations that carry out their research nearer the home base, such as the United States, Britain and the Netherlands, while timber processing is a relatively small-scale industry.

With aerospace, largely funded by the state, the five industries are responsible for well over 85 percent of all industrial research and devel-

RESEARCH AND DEVELOPMENT EXPENDITURE BY BUSINESS

Industry	1965	1969	1973	1977
Energy, mining	0.12	0.13	0.23	0.71
Chemicals	1.25	2.04	2.90	4.44
Engineering	0.34	0.55	1.39	1.77
Auto/trucks/buses	0.45	1.13	1.44	2.03
Aerospace	0.21	0.58	1.18	1.23
Electrical/electronics	1.14	1.90	2.64	4.44
Others	0.80	1.04	1.68	2.45
TOTAL	4.43	7.39	11.74	17.23
of which manufacturing industry	4.21	7.08	11.21	16.05

(Table compiled by the German Science Foundation.)

Research and development expenditure is biggest in the two major science-based industries — chemicals and electrical/electronics — but growth rates over the period indicate well-above-average increases in engineering and the automotive industry (through greater use of automation and automated processes, both in manufacturing and incorporated in the vehicles themselves) and in the relatively smaller but highly research-oriented aerospace industry as well.

Pressure to Compete

Pressure to spend on R&D arises from fierce foreign and domestic competition and from the accelerating progress of technology itself. This is evident from measuring expenditure as a percentage of sales. To use science foundation figures again, the seven fastest growing industries between 1970-76 included five of the biggest R&D spenders.

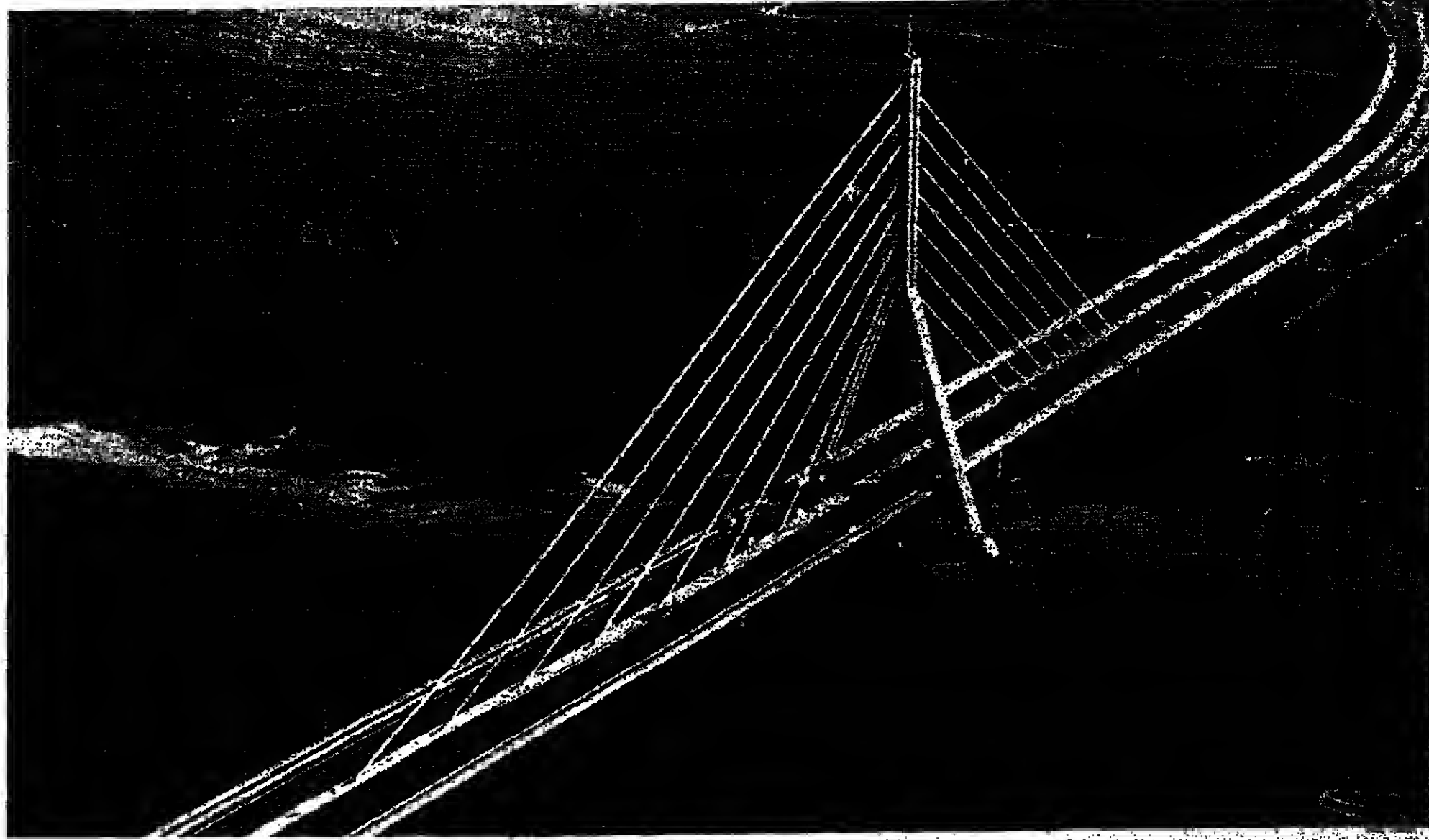
Research in West Germany. Three — chemicals, electrical/electronics and the automotive industry — alone account for about 70 percent. These three, with engineering, are also responsible for about two-thirds of West Germany's exports, a vital factor in the struggle against further threatening increases in the country's balance-of-payments deficit.

Smaller Companies

In recent years the federal government and private industry have turned their attention to small and medium-size companies. An analysis of 3,400 companies of all sizes regarding their planned investment in 1976-80 has shown the relative inability of smaller companies to spare cash and manpower on development.

The two largest R&D spenders, chemicals and electrical/electronics, are dominated by large, highly capitalized companies.

(Continued on Page 85)



One of five new steel suspension bridges straddles the Rhine near Flehe in North Rhine-Westphalia.

German Technology — 1980

Part One

Economic Miracle of Postwar Years Begins to Show Signs of Slowing

By Andrew Hargrave

BONN (IHT) — West Germany's economic performance, often considered a postwar miracle, shows signs of slowing down. After last year's satisfactory 4.4 percent growth in the gross social product, this year's increase is generally predicted at a more modest 2.5 percent. And ministers, industrialists and economic research institutes fear a further slowing as the 1980s progress.

This may result from factors beyond West Germany's control: economic stagnation in the advanced industrial world, combined with inflation; the escalating prices, growing scarcity and uncertainty of supplies in the energy sector; and increasing competitive pressures from advanced industrial countries and newly industrialized nations alike.

The fear of inflation has haunted Germans ever since the financial crisis after World War I. The present rate of inflation, is — at about 5 percent — among the lowest in the world. The question is, how long can the economy avoid "inflation" from the United States, Britain, France and Italy, where the rate is fast approaching 20 percent?

Energy is an even bigger worry. The price of imported crude oil, on which the country depends for more than 95 percent of its needs, has doubled in the past year, pulling up the prices of other fuels — including natural gas, of which West Germany imports almost two-thirds of its requirements. These two major fuel sources together provided 67 percent of the country's primary energy last year. Efforts to reduce dependence on imports since the 1973 explosion in prices have not changed the pattern much. At the same time, however, there is a close relationship between economic growth and energy consumption. The expected slowing of economic growth in the early 1980s may also delay the feared bottleneck in energy supply.

The statistics conceal some significant movements in the energy structure. The increase in the share of gas indicates a preference for using "friendly" and safe supplies from the neighboring Netherlands as well as from the considerable gas fields in northern Germany. Oil imports are

coming increasingly from the North Sea (mainly the British sector) to replace Middle East supplies, particularly those from Iran. More marginally, but still significantly, the decline in domestic hard coal production has been halted, and increased attention is being paid to making better use of the substantial indigenous soft coal deposits.

Nevertheless, the doubling of oil prices during the past year resulted in West Germany's first balance-of-payments deficit since 1965 and, according to Rolf Sammet, chief executive of Hoechst (one of the world's five biggest chemical concerns, three of which are German), last year's deficit of 9 billion Deutsche marks may well rise to DM 20 billion this year.

Mr. Sammet also spoke authoritatively about the strong inflationary effect of the oil price rise. (The West German chemical industry, absorbing 12 percent of the country's primary energy, is the largest single consumer.) He reckoned that imports cost the country an extra 18 percent last year, imposing an additional burden of 3 percent on the gross social product.

The federal government is well aware of the energy problem. The minister of research and technology, Volker Hauff, underlining the contribution to be made by the annual Hanover Fair to public awareness of the energy problem, stressed the priority given by the government to energy research. In 1972-79, he said, the government spent DM 10 billion for this purpose, and it is planning to spend a similar amount in 1980-83.

There can be no question of underestimating the importance of the way the government, private industry and scientific institutions are using technology in combating the energy crisis. But it must also be said that this has not eradicated resistance to extending the country's network of nuclear power stations. The low share of nuclear power in total energy as well as in electricity supplies (13 percent last year) is due to the fact that no new station has been approved for five years, and work on two is at a standstill. Nuclear power is expected to contribute more than half of the country's planned 40,000 megawatt capacity by 1990.

Beset by the energy problem and the comparative lack of other important raw materials, the growing current account deficit and the inflationary

virus spreading from Western trading partners and rivals, the Germans are fighting back with industrial and financial discipline, improved use of plant and machinery and, not least, input of technology, self-generated or adopted.

The central Bundesbank hopes that the curb on the growth of the money supply, combined with what for West Germany are high interest rates (a minimum lending rate of 7 percent, 8½ percent for discounting bills of exchange) should keep inflation in check. And while productivity growth has slowed somewhat, it still is ahead of most of its main rivals with the exception of Japan and, at times, France.

LABOR PRODUCTIVITY IN SELECTED COUNTRIES 1961-79

Average annual % change over certain periods

Period	Germany	US	France	UK	Japan	Belg.	Holl.
1961-64	+4.3	+3.8	+5.0	+2.4	+10.6	+4.2	+3.1
1965-69	+4.7	+1.9	+4.5	+2.5	+9.3	+3.9	+4.3
1970-73	+4.1	+1.4	+4.9	+2.4	+7.9	+3.2	+4.8
1974-79*	+3.1	+0.1	+3.2	+0.8	+3.4	+2.5	+2.4
1979*	+3.1	-1.0	+2.5	+0.2	+4.7	+2.7	+2.4

* Partly estimated

A further factor influencing West Germany's financial and economic equilibrium is the rising pressure of competition not only from its advanced industrial rivals but also from newly industrialized and developing countries. It is the legacy of the strong Deutsche mark, a relative lack of domestic raw materials, and high wage costs. Corporations have partly countered by investing abroad; the total is estimated at well over DM 65 billion — exceeding foreign investment in Germany, a comparatively recent phenomenon.

(Continued on Page 85)

Hanover Fair: International 'Ideas Exchange'

HANOVER (IHT) — The Hanover Fair is one of the major events in the world's exhibition calendar.

With an expected half-million visitors viewing the 3,500 stands — a quarter of them manned by foreign exhibitors from 40 countries — it is probably the most comprehensive "ideas exchange" to be experienced anywhere.

For ideas are the principal commodity at this fair, with the application of a wide range of technologies to an even wider range of products. Whether this profusion influences the buyer's mind is arguable. But the organizers obviously believe it does.

Claus Groth, the exhibition company's 43-year-old new chief executive, goes out of his way to emphasize flexibility of approach. "The fair has been changing over the past few years and will keep changing," he said. "We are in constant touch with our customers, advisers and trade associations and their wishes are always being carefully considered."

Demand Seen

But Mr. Groth insists that there is as great a demand for an integrated, multibranch technological fair as ever. "The fair," he said, "must reflect the market in an age of fierce competition and rapid technological advance."

With warnings of an energy crisis being sounded by oil-producing as well as the oil-consuming countries the centerpiece of this year's Hanover Fair is appropriately called "Energy 80." It is devoted to the conservation and replacement of oil of which West Germany imports more than 95 percent.

Commenting on "Energy 80," the minister for research and technology, Volker Hauff, has outlined some of the measures the government, industry and ordinary people are taking in that direction and the much greater potential that may derive from the sensible use of energy in home, office and factory heating, district heating and transport.

At the same time Mr. Hauff also re-emphasized the need for new, indigenous energy

sources which could, in part, replace oil. "We cannot afford to neglect alternative energy resources, certainly not nuclear energy; nor such alternatives that currently offer only marginal contributions to meet our overall energy demand."

Warning on Delay

He warned of any delay that might lead to a long-term deterioration in the energy situation. "Saving energy is not a once-and-for-all move but a continuing task," he said. "The Hanover Fair, in displaying what is new in the energy field, what already has a market appeal and what is still in need of development, performs a very useful function as a bridge between research and development on the one hand and the application of their results on the other."

Mr. Hauff's ministry sponsors a display stand on the objectives and key points of energy research. Trade associations and individual concerns show a series of energy-saving appliances such as waste heat use, sun roofs and heat pumps, as well as safety in nuclear energy, district heating systems and devices for a sensible relationship between energy production and use and the environment.

Another equally important feature of the Hanover Fair is "CeBIT," the office and information systems show which has attracted close to 1,000 exhibitors. There is this year a

Smaller Companies

much stronger presence of overseas concerns. For example, the United States is represented by 20 companies compared with 11 last year in addition to more than 40 indirectly represented; plus the many German associates and subsidiaries of U.S. concerns. Japanese representation has also increased.

The growing interest in this aspect of the fair (which may indeed lead to changes in the structure of the exhibition itself) reflects the continuing 8 to 10 percent annual growth rate in office electronics and information systems, which is way above the sluggish overall eco-

nomic growth rates in the advanced industrial world.

It is also significant that the majority of the expected visitors and specialist buyers to CeBIT are likely to be from smaller companies, those employing fewer than 500 people. For data processing is no longer limited to the giants. The steep fall in the prices of electronic devices and systems combined with a widening choice of applications offers medium-sized or even small companies an opportunity to reduce costs and simplify their operations at a relatively modest expense.

There are many new items on offer. West Germany does not yet have a public teletext system (the electronic newspaper) which is only at the testing stage, but visitors will be able to view it at Hanover. They will also have a chance of trying out several word processing devices (including the automatic translator) which are to present a serious future challenge to the typewriter as well as to the teleprinter — both on show at Hanover, with several new models.

They will see the way the microprocessor steers and controls a vast range of devices, from postal sorting to copying and storing information, from terminals controlled by a central computer to a network of instruments controlled from a central source.

There is indeed a special show at the fair which displays a variety of examples of how microelectronics may be applied in public transport, automobiles, aerospace, medicine, in the home and in leisure, energy (including energy saving), in measuring, testing and regulating instruments.

The application of microelectronics is incorporated in the traditional, and still very substantial, engineering and electrical sections of the fair as well, from machine tools and plant to electrical generation and transmission.

There are more than a score of conferences and seminars to be held during the fair. One of the most interesting of these is the three-day research and technology conference (for the first time at the fair) which is designed as

a dialogue between exhibitors and visitors on the subject of innovation.

Inquiries among the 75,000 technically qualified visitors at last year's fair have already ascertained that as many as 62 percent of them had found something interesting and stimulating for their business in the Research and Technology Hall. What is more, another inquiry has found that around half of visitors came from companies employing fewer than 500 people.

This year's show divides into three major groupings: results of basic scientific research; applied research and technology; and services for research and technology transfer, including contract research, patents, innovation advisory services, promotion of research and documentation.

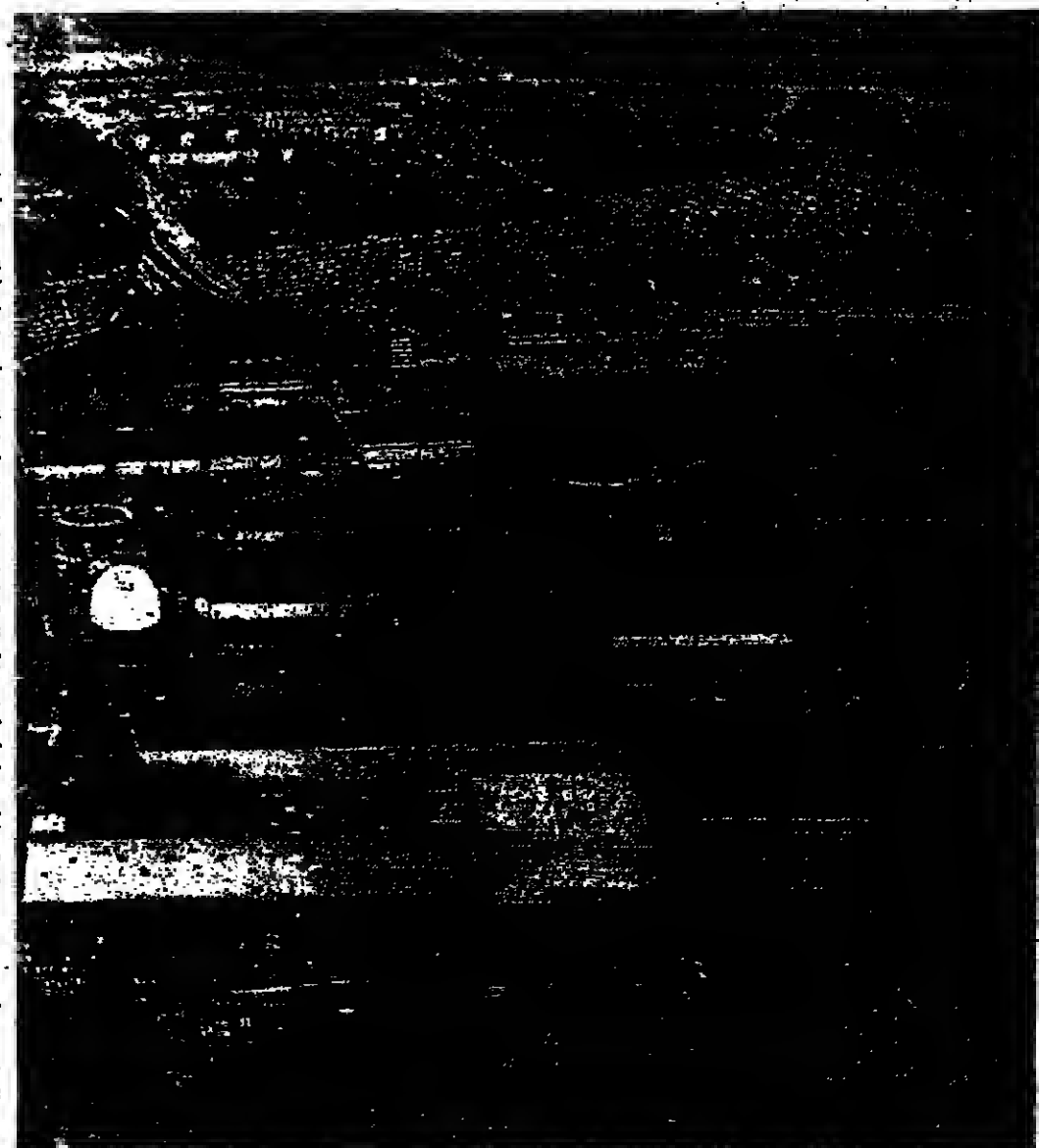
The fair also will have the first of a new series of shows entitled "partner countries." Each year a newly industrialized country will have the opportunity of displaying its technical skills as well as its potential. It is no surprise that the country launching the series is Brazil (represented by more than 120 companies) which has not only produced some of the most explosive economic growth rates in the 1960s and 70s, but is also a favorite manufacturing location for some of West Germany's most powerful engineering, electrical, automotive and chemical concerns.

One notable gap may nevertheless be mentioned. Although data processing in many of its aspects is a major feature of the fair, no place has as yet been found for the mainframe, central computer itself.

However, just as aerospace is now claiming a fair to itself (immediately after the big exhibition), it is just possible that sometime, perhaps in the not too distant future, the missing mosaic in the electronics show will also find its place.

As Mr. Groth has observed, the Hanover Fair lives by its customers and reflects the demand of the market place. Computers are, after all, increasingly central to the market place of the 1980s.

—A.H.



Aerial view of the vast fairgrounds in Hanover last year.

Handwritten text: "Hargrave 15/50"

R&D Gets More Public Money

By Andrew Hargrave

BONN (HRT) — Federal and state government spending on research and development has grown much faster than the social product in recent years. Last year the federal government's contribution increased by 12 percent to more than 11 billion Deutsche marks, of which the Ministry for Research and Development accounted for more than half. In the 10 years to 1979, government expenditure on science and technology has almost exactly tripled. This, according to research and technology minister, Volker Hauff, reflects the high priority it enjoys among government officials.

Mr. Hauff also asserted that, with nearly 2.2 percent of the gross social product spent on research and development, West Germany is among the principal scientific nations of the world.

Expenditure on research and development in West Germany from all sources was estimated at DM 33.7 billion last year, of which about half came from private enterprise. About one-third — just over DM 11 billion — was spent in the business sector, with private industry accounting for 78.2 percent. Of the rest, research institutions claimed about a fifth and universities only a sixth. Their financing came, although by no means exclusively, from federal and state sources. Especially in the case of institutes, fees earned from contracts have played a significant role in their budgets.

After the Ministry for Research and Development, the Ministry of Defense, with around a fifth, was the next largest research spender. But the biggest increase — almost doubling the 1978 figure — was recorded by the Ministry of Economics, mainly due to its new measures of promoting innovation and development at small and medium-size companies.

Research and development support for smaller companies is estimated to have amounted to more than DM 600 million last year, more than six times the 1972 figure. Half this sum came from the Ministry of Economics in the form of subsidies for personnel, buildings, patents, licenses, the introduction of new products, access to scientific information, subsidies for contracts placed with institutions, and tax concessions.

The Deutsche Wirtschaftsinvestitionsbank, a financial institution backed by the federal government and several major banks, has had its capital available smaller firms for innovative, high-risk, long-term projects raised to DM 30 million during the past year. The Ministry for Research and Development's projected expenditure this year is DM 6.175 billion, an 11 percent increase over last year. About 45 percent of it is earmarked for the support of scientific and technical institutions, leaving DM 3.3 billion for a promotion of research and development projects. This West German business is expected to receive support to the tune of about DM 2.3 billion, or 70 percent. (This is less, incidentally, than the DM 2.7 billion spent by the electrical/electronics concern, Siemens, in 1978-79; more than 90 percent of which was self-financed.)

The 13 major research institutions account for more than a quarter (about DM 1.6 billion) of the ministry's budget for this year. The significance of the energy research and development is underlined by the allocation of almost DM 1 billion to the nuclear energy sector. Hauff told a press conference, expenditure on en-

ergy research should reach DM 10 billion in the next four years.

Energy is the source of much controversy in the federal republic. The argument over nuclear power stations has halted new power station approvals for five years. To set public anxiety at rest, the federal government brought in legislation to make approval for nuclear installations dependent from 1985 on locations for atomic reprocessing and waste disposal being previously agreed to by the authorities concerned. (The political argument over such a location temporarily ruled out the government's own waste disposal choice of Gorleben, in Lower Saxony.)

The pressure has recently been growing — and not only from the nuclear industry but also from industry in general, concerned about adequate energy — for the nuclear power station program to be resumed.

Probably as a result of such pressure, the state administration of Hesse recently offered a home for reprocessing and atomic waste disposal, a decision that brought fierce response from environmental groups and from state Economics Minister Heinz Karry's Free Democrat (Liberal) Party. Further moves to seek interim waste disposal grounds are also afoot, and it may be of some significance that a Lower Saxony district court (which includes Gorleben) recently agreed to grant permission for such an interim waste disposal site.

Controversy also surrounds the issue of coal refining, on which the federal government intends to spend DM 13 billion on 14 projects throughout the 1980s and early 1990s. The proposal to divert 12 million tons of hard coal and 10 million tons of soft coal — all the proposed increases in output and more — to the production of such things as synthetic natural gas, gasoline and chemical feedstock, in order to save imports of crude oil and gas, has evoked a mixed response from the main users, who are already complaining about the high price of coal-based electricity.

Rolf Sammet, chief executive of the Hoechst chemical concern, estimates that to replace 15 million tons of crude oil, just 10 percent of West Germany's current oil requirement, would take 23 million tons of hard coal, or more than a quarter of the entire present coal output. Replacing 10 percent of the present gasoline and chemical naphtha needs by liquefied coal would require 45 million tons of coal, five times the present government-imposed limit on coal imports, he calculated.

This restriction on imports is one of the main bones of contention that West German industry and some Christian Democrat state administrations have with the federal government.

Despite its ambitious plans, the government is also being assailed for dragging its feet over the coal gasification program. So far four pilot projects have been approved, not including Krupp-Koppers, a subsidiary of the Krupp steel concern, which has clinched a large Polish order for a coal gasification plant. Krupp argues that its process deserves more attention from the authorities than it has so far received.

Germans, including leaders of industry and commerce, on the whole appreciate that energy is expensive and may soon become scarce. This would hit a country like resource-poor West Germany especially hard. But it is the cost and time-scale of using indigenous resources — including renewable ones — that feeds the debate, which shows no signs of abating.

Lasers and Glass Fibers Alter Optic Techniques

FRANKFURT (HRT) — The introduction of lasers, glass fibers and new artificial materials has profoundly influenced West Germany's optics industry.

The country was one of the pioneers in both microscopy and astronomy. Zeiss of Jena (now functioning at both sides of the German divide) was founded 134 years ago with the microscope as its main product.

Optics has now penetrated many industrial branches, especially for measuring and testing instruments. It is used in medicine as a diagnostic as well as a surgical tool; in aerospace as well as in an immense variety of applications in the original fields of astronomy and microscopy.

Carl Zeiss, with headquarters at Oberkochen in West Germany, still retains a strong interest in the optical telescope and is at present testing what is called an "azimuth mounting." This enables optical telescopes of ever larger sizes yet of consultant accuracy to be built following the successful introduction of the mounting in radio telescopes. Such telescopes may have mirrors of over 15 meters in diameter, yet have the accuracy of much smaller ones.

Zeiss is one of the main suppliers to the new Calar Alto astronomy center in southern Spain. It houses a number of telescopes from West Germany as well as from Spain, the newest and biggest of which, a 3.5-meter instrument, is due to leave the Oberkochen works late next year. "When it is put into operation, the astronomers of the Federal Republic of Germany will have tools for their work which can face any competition," said Prof. Hans Elsasser, of the Max Planck Institute of Astronomy, in the Zeiss house journal.

Aspheric (non-spherical) optics are being used in purely scientific investigations but also in the very practical fields of shaping and polishing "optically smooth" surfaces. These are a significant feature of modern engineering, energy (nuclear fusion), and testing and measuring instruments.

The Zeiss journal quotes one of its own scientists as saying that were it not for the cost, optical designers would prefer to use aspherics exclusively, if only for its much higher accuracy.

Optical instrument manufacture is still the larger part of the business of the Weizlar firm of Ernst Leitz, regarded as one of the pioneers in quantitative microscopy. (However, 40 percent of its sales are now in the field of photography, binoculars and projectors. It started the manufacture of the Leica camera 55 years ago.)

Its new products for testing and measuring include a combination of optics, precision engineering and electronics, including the use of computers to achieve high accuracy in evaluating tiny objects and particles.

A new field of optics in which Siemens is increasingly engaged is optical fibers, which are at present being tested by the Federal Post Office as a future replacement for copper cables in the telephone network.

The market in optical fibers is at present relatively small — it is estimated at only just over \$10 million worldwide — but it is predicted to grow sixfold by 1987 and increase by anything up to 17 times by 1992, replacing wires and cables in buildings of all kinds in addition to its widespread use in telecommunications.

Semiconductor light-emitting laser diodes are used in optical fibers, in calculator and watch displays, and for a variety of military and civil communications purposes. German companies are engaged in all three main areas of this fast expanding business.

—A.H.

Long-Term Financial Outlook

Investing in Technology Presumes Risk

BONN — Reconciling the business potential of excursions into high technology with the risk attached to any long-term innovative project has been one of the dilemmas facing the West German financial community. Most of the country's top businessmen would agree that technology is essential to maintain the competitive efficiency of industry on which the country's prosperity depends.

But most of them also maintain that, apart from special cases such as the aerospace industry, the financing of technological enterprise must be on the same basis as that of any other type of industry. The risks and potential rewards have to be balanced somehow.

Hans Friderichs, the former federal economics minister and now spokesman for the Dresdner Bank, believes that financing technology can be met by the banks only "to a limited degree." The banks have joined the federal government in underwriting 75 percent of the risks being taken by the Deutsche Wirtschaftsinvestitionsbank (Association for Financing Enterprise) to the tune of 30 million Deutsche marks.

Individual loans and contributions to equity capital range from DM 200,000 to DM 2 million. Support of another kind provides for overdrafts as well as taking up to 50 percent of long-term risk ventures within the so-called *betriebsgemeinschaften* (partnership associations). The advantage of the latter for the innovator is that he may reclaim the equity — and consequently buy back independence — as soon as benefits from the infusion of fresh capital enables him to do so.

Overdrafts

Some of the most asset-rich members of the West German banking community are the *Landesbanken* (state banks), which have a threefold purpose. They act as bankers and financial advisers to the state administration (including provision of finance for regional development) and as savings banks. But they also perform the function of a normal commercial bank, often at an international level, with foreign branches.

Thus, in providing venture capital for long-term, technologically oriented projects, the functions of aiding regional development and of supporting technological progress may coincide.

In Lower Saxony, for example, the Norddeutsche Landesbank (Nord LB) transacted a respectable DM 43-billion-worth of business last year, of which as much as 55 percent was devoted to long-term financing, a quarter of it in the energy sector.

Certain of West Germany's leading public utilities operate in or adjoining Lower Saxony, and some of the credits for adjoining power stations — including the very capital-intensive nuclear ones — as well as ensuring better utilization of scarce resources such as crude oil, gas, hard and soft coal are provided by the Nord LB alone or on a consensual basis with other banks.

The fact that Lower Saxony possesses almost all the country's proven domestic gas reserves and 88 percent of its domestic oil deposits places Nord LB in a strategic position, chief executive Adolf Kracht said. The state also has considerable land areas for sugar beet production. Sugar beet can be refined into ethanol, which, mixed with gasoline, could reduce oil imports, albeit only marginally. Being a coastal state, Lower

Saxony could also serve as a testing ground for the wave and tidal power potential of the North Sea. The same applies to wind energy. Wind converters in use in the coastal areas of Denmark are an example of the potential of this renewable source of energy.

Mr. Kracht shares the view of the Lower Saxony administration that a major coal conversion program (gasification/briquetization) depends on stepping up coal imports. Hence his recent visits to East Germany, Poland and South Africa as a member of purchasing groups arranging or discussing long-term contracts.

Other discussions included a possible DM 200-million credit facility to Poland, which would include technology transfer as well as hardware to be provided by leading West German concerns.

At home, Nord LB is involved in regional development projects, such as the direct-reduction steelmill being built at Emden jointly by the Norwegian Ferrosal and the German Korf groups. The bank also has its own business analysis department to advise mainly smaller companies with insufficient expertise in assessing the viability of long-term technology-based projects.

The importance of this particular facility is underlined by the Christian Democratic state administration's policy to "help those who help themselves."

The state economics minister, Birgit Breuel, is no believer in long-term subsidies and prefers that finance arrangements be scaled down as projects progress. Much more, she emphasizes the need for strengthening the effectiveness of research and development facilities, introducing new ones where necessary and improving technology transfer and cooperation between research institutions and private enterprise, especially for smaller companies.

In this context, she said, she has found office systems, energy technology, district heating, rubber and deep sea technology as the most interesting fields for the future. (Lower Saxony has already offered locations for pilot coal refining plants.)

The relationship between Nord LB and the Hanover Fair company is a long-standing and very close one. The chairman of the bank, the finance minister of Lower Saxony, Walther Leisler Kiep, is also chairman of the exhibition company's supervisory board. Accompanied among others by chief executive Claus Groth and Mr. Kracht, Mr. Kiep has made several visits abroad during the past year to publicize the fair.

(There is also a "special relationship" between the chief executives of the fair and Nord LB. Both hail from the Ruhr city of Dusseldorf, where Mr. Groth was a member of the local exhibition company's management board and Mr. Kracht an executive of the Ruhr state bank, the Westdeutsche Landesbank. Both in their 40s, they belong to the younger generation of managers, which may also be of some significance in their attitudes to business.)

A considerable help for the potential outside investor in Lower Saxony could be the computer-designed "profiles" of individual locations, which help potential investors and the bank to appraise the profit and risk of any project.

—A.H.

The skies:
often the scene of
sporting
achievements.

Parachutists plunging to earth from tremendous heights — over 30,000 feet is the record. Free-falling at a speed of 125 m.p.h. The greater the height from which man dares to jump, the greater is the physical strain on his body. He has only just enough air to breathe. The temperature increases rapidly — from -56°C six miles up to +15°C near the ground. The jumper's face becomes covered with

ice. His crash helmet presses on his cervical vertebrae. And when the parachute opens, the strain on his body is enormous. Jumping from the clouds is a challenge to man's powers of physical endurance. And to the materials that protect him and give him confidence. Bayer helps in meeting this challenge. With products that stand up to the severest service conditions.

With more than 6,000 products, Bayer is involved in almost all areas of human activity. With synthetic materials for helmets, protective equipment, shoes, the construction industry, drilling equipment, pipelines and for the automotive industry. With paint raw materials for surface protection in aircraft, railway stock, industrial plants, domestic appliances and furniture. With pigments

for houses, furniture and machines. With textile fibres made to withstand extreme loads and superior in many ways to natural products. With dyes for clothing. With pharmaceuticals, both prophylactic and therapeutic. With agricultural chemicals as an effective weapon in the fight against hunger. With ideas on saving raw materials and protecting our environment. Bayer spends one-twen-

tieth of its annual turnover on research. To make our lives easier, more colourful, more enjoyable.

Bayer thinks of tomorrow — today.

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Engineering Sales Lead the Rest of World

By Andrew Hargrave

FRANKFURT (IHT) — Engineering, while no longer the industry commanding the largest sales and output in West Germany, is still one of the big three in manufacturing, with sales well over DM 100 billion a year.

At the beginning of the 1970s, engineering led the list, ahead of chemicals and motor vehicles. In 1978, though representing an unchanged 10.5 percent of the country's manufacturing sales, engineering with an aggregate turnover of DM 105.3 billion was third after motor vehicles (DM 114.8 billion) and chemicals (DM 110.6 billion).

At the same time, West Germany boasts the largest world sales in engineering, having overtaken the United States in 1977.

Indeed, in 1978 more than half the industry's sales were in exports compared with only 43 percent in 1970. This was still lower than the peak 60 percent achieved in 1974, in the aftermath of the oil price explosion.

However, during the past decade there has been a fundamental change in the structure of German engineering exports. It concerns a branch of the industry (large plant) where exports outsell home sales by more than three to one and where new orders show an even greater gap in favor of exports.

In 1978, Iran was by far the federal republic's largest customer for large plant (including nuclear power stations), responsible for more than a quarter of all the new orders (in value) that year. The next four largest customers were China, the Soviet Union, Saudi Arabia and Brazil in that order, with even the last-mentioned ordering substantially more than the whole European Community.

The financial risk in such a shift in the industry's export pattern has always been there. But it became patently obvious after last year's Islamic Revolution in Iran, which alone is estimated to have cost West German manufacturing industry as a whole around DM 8 billion in canceled or abandoned work.

Dr. Kurt Spiller, a member of Mannesmann-Demag's management board, has put it graphically thus: "In the last 10 years, the share of developing countries (including those of OPEC) in the exports of large engineering plant rose from 20

percent to 50 percent and those of Socialist (state trading) countries to 30 percent.

"These shifts in our markets have more than just geographical significance," says Dr. Spiller. "They have also re-defined the quality of market conditions: for there is, of course, a difference between delivering a steelworks to an industrialized country like France where we have known the market for years or delivering the same steelworks to countries such as Algeria, Iran, Nigeria, Venezuela or the People's Republic of China."

Market Shifts

Moreover some of these countries, including certain oil producers, have been piling up international debts (not to speak of the implications of a political upheaval such as Iran) while the size and cost of the average single plant had more than doubled. At the same time, Germany's traditional markets have become less important.

This, says Dr. Spiller, is partly the result of declining manufacturing investment in the advanced industrial nations, and partly to an increasing proportion of that lower investment going not into expansion, but into replacement and rationalization.

West Germany itself is an outstanding example of this trend.

According to the chief executive of Gutehoffnungshütte (GHH), Dr. Manfred Lennings, in 1970 more than 45 percent of manufacturing industry's capital investment went into expansion. In 1976-79, that proportion fell to just 20 percent.

Another Aspect

Another aspect of the same problem is the declining share of manufacturing industry as a whole in the country's aggregate capital investment. In 1970 it represented 25.5 percent of the total. By last year it had declined to under 18 percent.

Yet Dr. Lennings doubts whether manufacturing industry has lost its significance even in an increasingly "service-oriented" society. The added value produced has not changed a great deal in the past 20 years and is still slightly over half the national total.

However, he argues, even though there had been little structural change in the economy as a whole,

significant changes have occurred within manufacturing industry itself. Unchanged added value alongside declining investment means a gradual wasting of capital assets.

West German executives blame the erosion in the industry's competitive edge partly on the rising value of the Deutsche mark.

They cite the U.S. dollar as an example: it has declined to less than half its DM value in a decade and, consequently, more than doubled the price of German products. The decline in the French franc has had similar results: the price of German exports has risen steeply over the same period while the price of French machinery has dropped by more than 50 percent in marks.

The currency changes coupled with rising wages and fringe benefits has made Germany a high-cost country.

Since 1978, inflation has, of course, taken off in some countries, particularly in Italy, the United States and Britain, in all of which the annual rate is approaching 20 percent while in West Germany it is still around 5 percent.

Lower Wages

However, the high value of the mark is increasingly forcing plant manufacturers to transfer part of the work on export orders, including subassemblies, to locations where wages are considerably lower. Moreover, some of these "newly industrialized countries," notably Spain, India, Brazil, Mexico, Singapore, Taiwan and South Korea have themselves become formidable competitors for export markets.

So, West German executives fear, the time is rapidly approaching when quality, reliability and service will no longer be sufficient to outweigh the price advantage offered by those and other low-cost competitors.

It should be noted, though, that notwithstanding currency changes, high labor costs, growing competition and increased financial risks in the new export markets, the West German engineering industry still managed to export over half its output last year and exceed imports in engineering products by a ratio of more than three to one. Furthermore, the year ended with the order book up by an above-average 8 percent, although within this total the value of domestic orders rose uncharacteristically by more (11 per-

cent) than export orders which increased by only 5 percent.

It is in the longer term that the fears of executives, particularly in the area of technology-transfer to customers in less developed areas of the world, may be justified. The argument that a country can maintain its technological excellence by exporting technology rather than products containing that technology is dismissed as a "dangerous illusion" by some executives.

"The problem of technology is less in conceiving an idea than in executing it," said one. "Without a sound domestic manufacturing base, there can be no continuing export of ideas: for no one can design plant and machinery that function perfectly without having their practical application constantly before his eyes and without experiencing the drawing being slowly transformed into machinery of iron and steel."

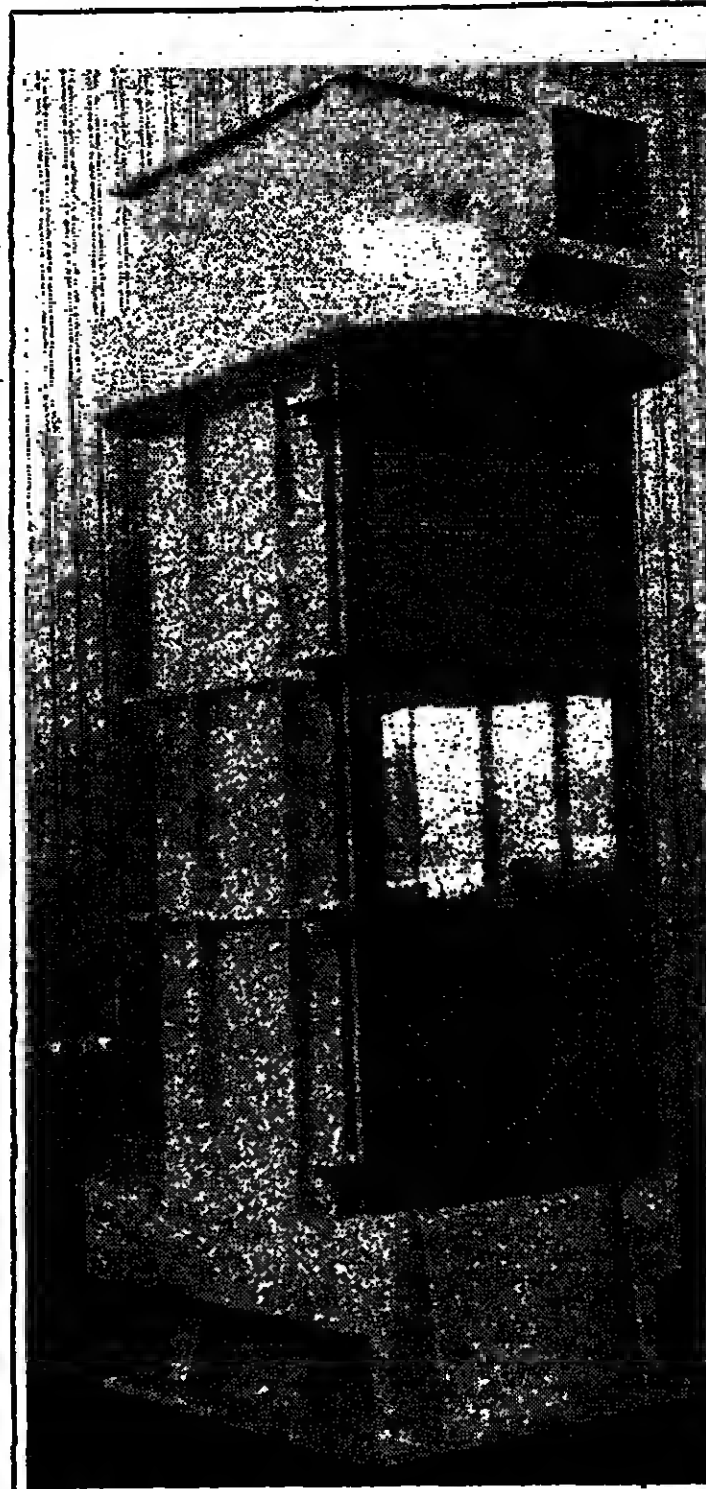
New Danger

There is yet another danger to West Germany maintaining high exports of plant and machinery to the new, expanding markets in the less developed world. Dr. Theodor Messing, spokesman for the Plant Manufacturers Study Group, has estimated that for every DM 1 billion addition to the export order book, the recipient has to send 1,000 engineers, technicians and others to location. The DM 12 billion booked by West German manufacturers of large plant in 1978 consequently means sending 12,000 of these people abroad.

This is happening at a time when even high salaries are insufficient to spend years of their lives (often under difficult conditions) abroad. At a time when the number of engineers, including skilled workers, is on the decline (as it is in many other advanced industrial countries).

"We are still living on the technological credibility of previous generations," said the executive, concerned that the time may come when the export of ideas turns into a "clearance sale."

He added, however, that now that the danger has been generally recognized in the capital goods industry — in engineering in particular — higher recruitment through increased educational opportunities should enable the industry retaining its top international position in the 1980s.



Water purification equipment manufactured by Krupp subsidiary, Buckau R. Wolf of Grevenbroich.

Electronics Industry Faces Competition

FRANKFURT (IHT) — The West German electrical industry faces increasing competition not only in the tough international market but also in the domestic one.

Last year, turnover of the industry nudged for the first time the DM 100 billion mark, fully 35 percent of which accounted for exports. It recorded an above-average increase of nearly 6 percent (compared with the 4.4 percent rise in the gross social product).

Exports, however, increased by only 4.6 percent while imports rose by a hefty 22.4 percent. The corresponding figures for 1978 were 6.5 percent and 15.1 percent respectively, thus showing a trend which has resulted in exports exceeding imports only by a ratio of 1.5 to 1 instead of the 2-to-1 ratio experienced as recently as 1976.

It is an industry with a very high technology content. Consequently, research and development expenditure is high, amounting to between 5 and 6 percent of turnover. (Some of the major companies are spending even more: almost 10 percent by Siemens and the 7 percent by AEG Telefunken in spite of troubles).

Fast Pace

Apart from the pressure of world competition, the pace of innovation, too, forces the industry to spend more on R&D. Electronics comprised about one-fifth of the industry's output in 1950-55: its share rose to 28 percent by 1960-65 and already in 1976 it was around 40 percent.

For a market leader like Siemens it has meant that almost half the products sold last year were less than five years old. For the industry as a whole, about 40 percent of sales consisted of products less than 10 years old already in 1977.

Consumer electronics, such as television and radio sets, refrigerators, washing machines, etc. are often in the limelight because of their popular appeal and effect on prices in general. And although West Germany is still (at DM 21.4 billion last year) the largest European producer of appliances, it amounts to less than 25 percent of the industry's output.

The dominating sector is capital goods which, at DM 30 billion last

year, took up 60 percent of production. Indeed equipment for power generation, at almost DM 23 billion (or 27 percent of the industry's output) exceeded consumer appliances considerably in spite of the slow-down in the electricity generation program, of nuclear stations in particular.

The fastest growing sectors of the industry are the smaller ones, such as measuring and testing equipment, communications (both telecommunications and information systems) all of which benefit increasingly from "electronicization," including the fast-expanding use of microprocessors for steering and control and computers as a major tool.

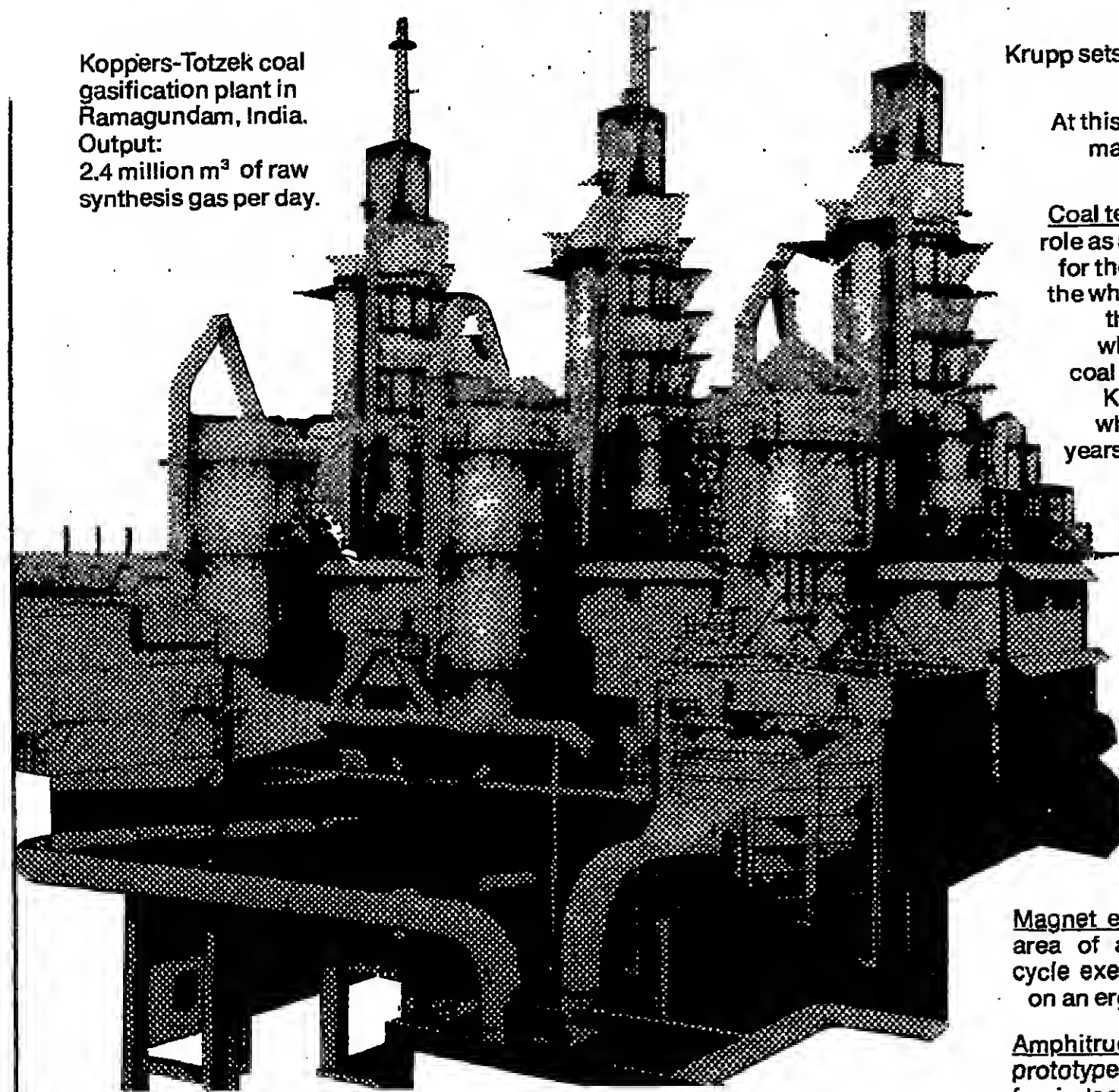
These are, incidentally, also the sectors where, second only to consumer electronics, import penetration and worldwide competition is general as it is in fact.

Looking ahead to the new decade, Prof. Rudolf Scheid, chief general manager of the industry's trade association (ZVEI), envisages strong rates of growth (annual 3 to 4 percent) in the first half of the 1980s. The two main reasons given for his caution are the already mentioned resistance to the power station program (particularly its nuclear aspect) but also what he observes to be a rejection of rationalization.

The second half of the decade could well be influenced by what happens in the first half. The industry, but also the public utilities, anticipate bottlenecks in power supply which could have a harmful effect on appliances in the home and for heating, in general. However, this in turn may present challenges to the industry for "designer" he has more energy — heat pumps, solar roofs as well as better control systems. The spread of microelectronic devices, too, should provide an impetus which could benefit the industry.

All these and other developments are likely to increase the pressure for structural changes, both within the industry (especially in plant construction) and, above all, in exports. West German manufacturers must increasingly provide not only equipment but a complete "technological package" — an associate of logically organized know-how.

—A.H.



Koppers-Totzek coal gasification plant in Ramagundam, India. Output: 2.4 million m³ of raw synthesis gas per day.

Krupp sets standards of engineering achievement.

At this year's Hanover Fair Krupp is presenting main areas and new features of its range of products and services.

Coal technology: Coal is again playing a major role as a source of energy and as a raw material for the chemical industry. Krupp's role covers the whole course from exploration of deposits, through mining equipment — e.g. bucket-wheel excavators, preparation plant — e.g. coal mills, to coal conversion plant — e.g. the Koppers-Totzek coal gasification process which has been operating successfully for years on a commercial scale. These activities are on show at Hanover.

Process automation: Modern industrial facilities are no longer feasible without process automation. Krupp's leading role as an engineering contractor is strengthened by the complete hardware and software systems it can offer for controlling and monitoring process flows. The POLDIS® automatic loading and dispatch facility of a cement plant is being demonstrated at Hanover in simulated operation. We are also showing the PVS 1100 process video system as used to monitor a chemical plant and check aircraft engines.

Magnet engineering: Interesting aspects of this area of activity are being demonstrated on a cycle exerciser to strengthen your muscles and on an ergometer to measure how strong you are.

Amphitruck: At Hanover Krupp is unveiling the prototype of an amphibious truck for cargo transfer independent of harbour facilities. This will provide a solution to cargo-handling problems in many developing countries and coastal construction sites.

Size reduction: On display is the new electrohydraulically controlled KUBRIA® cone crusher for the quarrystone, gravel, cement and ore mining industries.

Space heating: We are exhibiting energy-saving heating systems featuring Krupp heat pumps.

Plastics machinery: Krupp is one of the leading manufacturers in this field and our experts are on hand to tell you all you need to know about our comprehensive range of injection and blow moulding machines. A "KR 35" is producing take-away beakers.

Independent power supply units: For remote areas or for the supply of emergency power to large buildings, hospitals, etc. A complete diesel unit with an output of 960 kW is on display in the Krupp Pavilion.

Plantmaking: Unfortunately there isn't quite enough room in our Pavilion to accommodate a steel mill, or a cement plant, or a sugar factory, or a fittings foundry, let alone a DMT plant, but many details can best be explained using accurate models of actual plants — and it's details that count in the design and construction of major plant.

Visit Krupp at the Hanover Fair, talk to the experts. Krupp experts know the way — even if you lose yours in the maze game our software specialists have thought up for your amusement. Krupp pioneers new paths — keeps progress on the move.

Hanover Fair '80

Where to find us at Hanover:

Krupp Pavilion, Steinstraße, outdoor display area, Stand 700.
 Aktien-Gesellschaft "Weier": Buckau-Heiter-Group
 Krupp Altes-Elektronik: Krupp Forschungsinstitut
 Krupp Industrie- und Service: Krupp-Koppers GmbH
 Krupp West-Maschinenbau GmbH: Krupp Polyplus AG
 Krupp Stahltransport: Krupp Technischer Handel: Krupp Wida: Vereinigte Flugtechnische Werke-Fokker GmbH
 Bertner-Alles Stand 100:
 Fried. Krupp Hüttenwerke AG
 Hall 12 ground floor, Stand 283:
 Krupp Altes-Elektronik
 Hall 20 (Brazilian Pavilion), Stand 705/806/807:
 Krupp Metalurgica Campo Limpo Ltda.

KRUPP

A TRADITION OF PROGRESS

Handwritten signature or stamp.

North Sea's Crude Affects Oil Imports

By Andrew Hargrave

DUESSELDORF (IHT) — The availability of North Sea crude has brought sharp changes to the structure of West Germany's oil imports.

Last year Britain and Norway together delivered 15.3 million tons of the 107 million tons that were imported, not far short of the country's two leading suppliers Saudi Arabia (17.9 million tons) and Libya (17.3 million tons).

The North Sea is this year expected to become the top supplier of West Germany. The security of supplies from the North Sea is being safeguarded by the arrangement between British Petroleum and Veba, West Germany's leading oil-chemicals-trading and public utility group, for an annual delivery of 3 million tons of oil for 20 years. (Since the short-term contracts with Saudi Arabia, one involving Veba the other a group of independent, have also been concluded.)

The arrangement was part of a DM 800 million deal between Veba and BP which included, among other things, the transfer of some of the former's refinery capacity and a restructuring of Veba itself. It was an important factor in Veba-Oil's first profit since 1974 last year and a utilization of 36.2 percent of its streamlined refinery capacity of 18.8 million tons, compared with only 64 percent used in 1978 before two of the refineries were sold to BP.

Tar Sands

(It has to be pointed out that the German associates of other oil companies including Esso, Mobil and BP also showed profits last year on their share of the North Sea oil.)

VERBA is also the major shareholder in the West German oil exploration company Deminex which itself has a share in several oilfields in different parts of the world, including the North Sea, Libya and Egypt. The group also invests in oil shale and tar sands exploration as far apart as Brunsen, in northern Germany, and the river Orinoco in Venezuela respectively.

The major part of West Germany's oil refinery capacity however belongs to the big international companies. These, along with Veba, own the country's slender and declining onshore oil deposits which are now down to an annual delivery of around only 5 million tons of crude.

Oil is still the largest single supplier of energy in West Germany with a 51 percent share of the energy market last year. A determined drive to cut on appliances in the economy as well as to substitute has however resulted in changes in the structure of oil refining. For instance, the centerpiece of Veba's own refinery restructuring program for restructuring refinery capacity is a DM 350 million hydrocracking plant at Scholven, more than 50 percent of whose planned yield of 1.5 million tons a year would be gasoline at a conversion ratio of 95 percent.

There were signs even after the first oil price explosion following the outbreak of the 1973 Middle East war of a change in the oil processing and consumption pattern, mainly in favor of light distillates and at the expense of heavy fuel oil which is most easily and economically replaceable by coal. Continued steep price increases will no doubt accentuate the trend, one example of which is the shift towards gasoline in Veba's planned new hydrocracker.

The switch to the production of motor, aviation and diesel fuel as well as petrochemical feedstock (naphtha) will require very large investments in refinery restructuring over the next few years. A substantial proportion of Veba-Oil's DM 3 billion investment planned over the period 1980-84 (part of the group's investment of DM 15 billion) will go into such new plant.

The German associate of Esso is to spend DM 600 million this year alone, one-third more than last year. Some of this sum, too, will be invested in modernizing refineries.

Production of Hard Coal Increases Again

ESSEN (IHT) — Since the mid-1950s hard coal, once the mainstay of West Germany's energy supply, has been in decline. There were 175 pits in 1956 compared with only 40 today. Output slumped from 150 million tons then to 83.5 million tons in 1978. The brief revival following the Middle East oil crisis in 1973 was not sustained.

The tide has apparently turned once more last year with an additional 2 million tons of coal produced. It promises to be more durable this time. The further escalation of oil prices combined with the continuing stalemate in nuclear power station approvals and the threatened scarcity of energy in the latter part of this decade has evoked response from both the authorities (in the form of steeply increased aid from the federal government and the state administration) and the companies which specialize in the mining, refining and upgrading of coal.

This incidentally applies also to soft coal or lignite. For these two types of fossil fuel comprise the only major natural fuel resources of West Germany. Deposits of about 24 billion tons of hard coal and 35 billion tons of soft coal (equivalent in calorific value to about 12 billion tons of the former) are adjusted to be viable for exploitation, sufficient to last for at least 250 years at present levels of production.

At present about a third of the hard coal and 85 percent of the soft coal are burnt in power stations in a raw state, with at least two-thirds of the heat lost in the process. (Together they contributed 27.7 percent to the country's power supply last year). A somewhat larger proportion is used as coking coal in steelworks, much of it exported to other members of the European Community.

Many Facets

This newly gained optimism in the future of coal has many facets. At the production end, Ruhrkohle, by far the largest coal concern in West Germany, has announced a five-year investment plan of DM 8 billion to 8.5 billion, of which DM 5 billion to 5.5 billion will be spent on new or extended sinkings.

The coal concerns led by Ruhrkohle have now agreed — and the federal government has approved — to raise coal deliveries from the present 33 million tons a year to 45 million tons in 1990 and to 47.5 million tons in 1995. The contract provides for 511 million tons of hard coal being burnt in the power stations during the next 15 years.

As already noted, burning coal in a raw state, with heat losses of 65 percent or more, is not a very efficient way of using an increasingly scarce and precious raw material. This applies with particular force in West Germany where just over half the energy requirements

are met by oil, 95 percent of which is imported. The efforts to upgrade and refine coal, both hard and soft, have intensified in the last year or two. The techniques of coal gasification and liquefaction which go back almost 60 years have been dusted off, brought up to date by the application of nuclear technology and put, although largely experimentally so far, into domestic practice.

It is strange to record that the two leading coal refining specialists, Lurgi and Krupp-Koppers, have in fact been installing plants worldwide for the past decade. In South Africa, for instance, the Lurgi technology converts coal into synthetic natural gas, motor fuel and chemical feedstock which, within the next few years, will enable that country to meet half its entire motor fuel needs. Krupp-Koppers have just clinched a major Polish order to gasify hard coal, its 26th of this type of plant.

9 Pilot Projects

In West Germany, nine pilot projects are functioning to date, all set up within the past four years, six of them within the past 18 months. Among them are two experimental plants converting soft coal into gas or liquids. The rest includes the latest and largest (with a capacity to process 11 tons of hard coal an hour) a "combined" power plant based on the most up-to-date and economical fluidized bed combustion process, at Voelklingen in the Saar. Three other recent ones are based on the Lurgi, Texaco and Shell-Koppers processes respectively at Dorsten, Oberhausen (Ruhr) and Hamburg, the first with a throughput of 7 tons of coal an hour, the others of 6 tons an hour.

Earlier this year, the federal government announced plans to go beyond the pilot stage and help to set up fully fledged commercial plants.

The program which is to cost DM 13 billion and is to be completed sometime during the early 1990s provides for 14 substantial coal gasification and liquefaction plants of various types (some "coupled" to nuclear power stations to use its process heat) in the Ruhr and in the Saar, the major coal producing areas. They will process up to 12 million tons of hard coal and 10 million tons of soft coal a year, all of which is to come from increased production.

All these plans are based on the assumption that oil and gas prices are likely to rise further in the coming decade and that supplies, particularly those from the Middle East, may again be subject to the kind of uncertainty as experienced after the 1973 war and during last year's Islamic revolution in Iran.

Indeed, Dr. Karl Schmid, a spokesman for Krupp-Koppers (a subsidiary of the steel-and-engineering group) claims that even in the present state of technology it would be possible

to build at the cost of around DM 450 million a plant to extract 500,000 tons of methanol a year from 1.5 million tons of coal on a profitable basis, provided half the cost were met by a government subsidy. (Methanol is already on trial in the federal republic and elsewhere as a gasoline substitute, in a ratio of 15 percent methanol to 85 percent gasoline).

The rub is Dr. Schmid's further condition: That methanol, with its lower calorific value, should be taxed accordingly lower than gasoline and that the coal used for the process should be at world market prices, which is considerably lower than the expensive German coal. This would in turn presuppose a substantial raising, in the face of objections from the industry and labor unions, of the import limit for coal, set at present at 7 million tons a year.

While the experiments in coal technology are generally welcome, considerable reservations have been expressed by major energy users, especially in the chemical and steel industries.

These reservations center generally on the cost (of the coal itself, of the required energy input, of the expensive new plant that needs to be installed) but also on the undisputed fact that in many cases, efficient coal refining depends on using waste heat from and therefore being linked with nuclear power stations. Until the future of nuclear power is ensured (so the argument goes), much of coal upgrading may have to be kept in abeyance.

Best Chances

Not surprisingly, the chemical industry's attitude (summed up in a recent paper) judges the best chances for coal in substituting it for heavy and light fuel oil for house and district heating, process heating and power generation. In some cases — for example synthetic natural gas — the conversion from soft coal is thought to be already cheaper than conversion from fuel oil. The door for its use in the chemical, iron and steel industries as well as for process heating may already be open.

The paper adds that gasified soft coal may compete with natural gas itself by the mid-1980s if the present real increase in gas prices — 2 percent a year — continues.

Solutions of this kind would, of course, benefit the chemical industry specifically, by leaving more oil to be distilled into naphtha, the industry's main feedstock.

As for soft coal, the main West German producer Rheinbraun, a subsidiary of the leading public utility RWE, already claims the saving of a million tons of imported oil by substituting pulverised soft coal for firing cement kilns. More oil is being substituted by the use of soft coal briquettes and coke in various industrial processes.

—A.H.

Lower Saxony Seeks Fuel Diversification

HANOVER (IHT) — The state of Lower Saxony, by far the biggest source of domestic oil and gas in West Germany, is waging a battle for relaxation of controls on hard coal imports, which are limited to 7 million tons a year.

Birgit Breuel, economics minister of the state's Christian Democratic administration, has protested repeatedly to her federal counterpart, Graf Otto Lambdorff, because the federal government has not raised the import quota.

Mrs. Breuel points out that the practical alternatives to crude oil, with its escalating prices, are limited to coal and nuclear power. Nuclear power is a politically sensitive issue, however, while the maximum output for hard coal by the year 2000 is projected by the coal industry at no more than 110 million tons, or 25 million tons more than last year's production.

On the other hand, Mrs. Breuel argues, the world coal market also has its limits, and postponing a decision on liberalizing coal imports could lead to an inability to conclude long-term contracts at reasonable prices.

Statement Sought

The Lower Saxony administration's demand is for an "early, clear and factual statement" about the role of domestic coal, especially regarding its refining for power stations, its use in the chemical industry and the proportion of crude oil it is supposed to replace. Moreover, Mrs. Breuel said, there should be a clear statement about the share that nuclear power could take in providing electricity, and on what extent the energy price situation warrants coal subsidies in a free market economy.

Lower Saxony's own power pattern provides an interesting contrast to that of the federal republic as a whole, and largely explains the administration's stance.

The proportional inputs of natural gas and nuclear fuels are much larger, in comparison (the bulk of West Germany's gas deposits are in Lower Saxony), while those of coal, both hard and soft, are considerably lower.

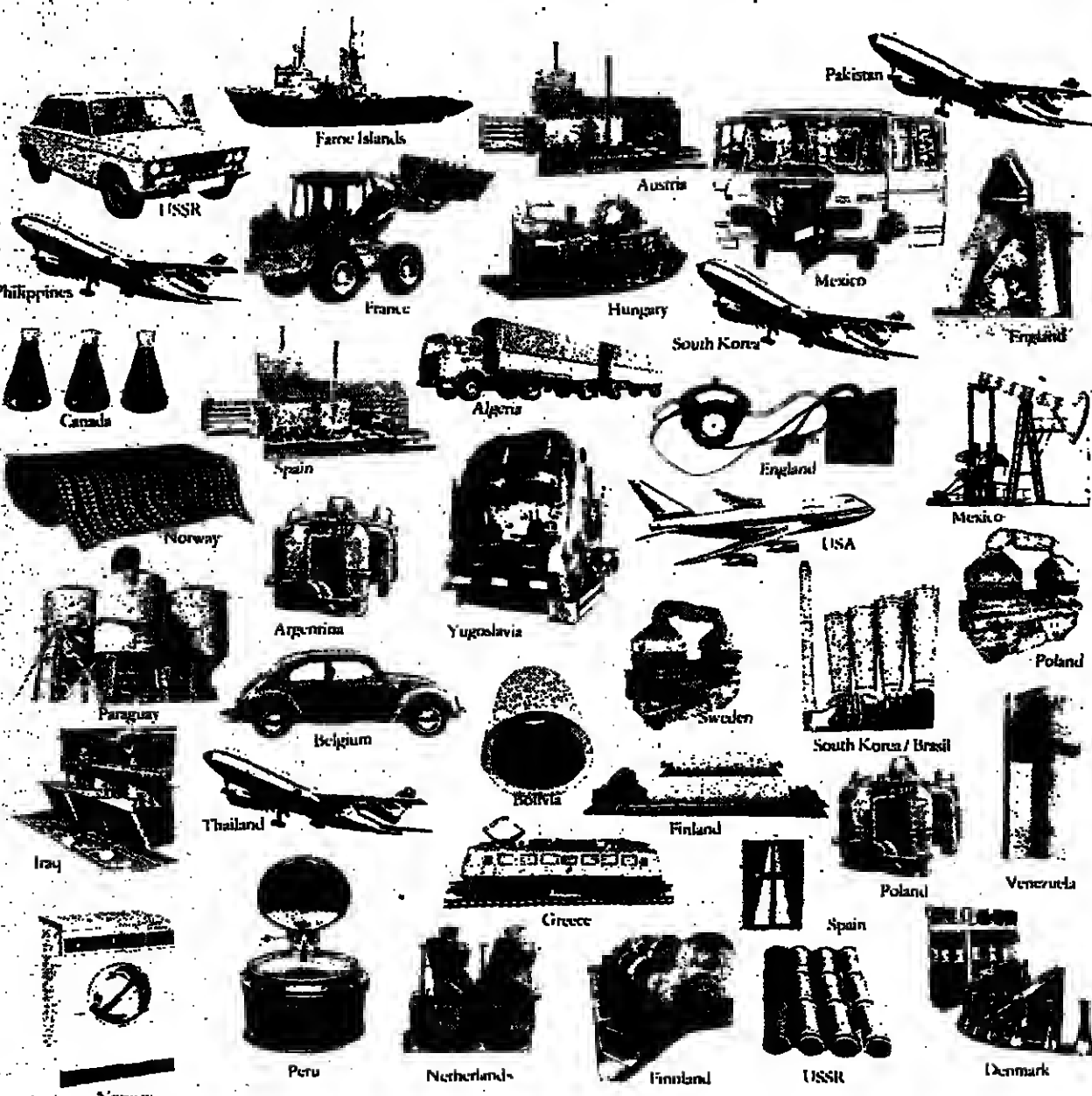
Provisional figures record slight decreases in the use of nuclear energy and natural gas last year (to 21.1 percent and 39.4 percent respectively), while the share of hard coal rose considerably, to 21.9 percent. It is not surprising, therefore, that the free-market, cost-conscious administration of Lower Saxony is trying to impress on the federal government (a coalition of Social Democrats and Free Democrats) the need for cheaper coal imports and, by reducing or altogether cutting out the so-called "coal-pfenning" (which is paid by electricity consumers), for easing the cost burden on industry and households.

Such a demand conflicts with the government's aim of reducing imports to slow the deterioration in the balance of payments. Bonn is also under pressure to protect domestic coal. The lobbyists include Ruhrkohle, the main coal producer; the miners' union; and the state administration of North Rhine-Westphalia, which adjoins Lower Saxony and in which most of the West German pits are located. Being a coastal state, Lower Saxony would prefer to buy cheap foreign coal for its coastal power stations, build up the nuclear sector and cut down on the use of gas and oil to economize on local reserves.

According to the Lower Saxony administration, energy prices play a significant part in the location of industry, for new enterprises and the expansion of existing ones. Although the state's unemployment rate, compared with that of the Federal Republic as a whole, has improved of late, it is still above average. Moreover, with international economic trends pointing downward, Lower Saxony's high share of exports (35 percent of production compared with 25 percent for the federal republic as a whole), renders the state more vulnerable to an international recession.

—A.H.

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Special Steels Crowd the Market

By Andrew Hargrave

DUESSELDORF (IHT) — Crude steel production in West Germany was up by 5 million tons to 46 million tons last year, which is still 7 million tons less than the peak in 1974.

What is remarkable, however, is not this recovery in output but the fact that in the wake of the first oil crisis in the autumn of 1973, they set about changing course drastically, away from volume toward special steels, and sometimes from steelmaking itself.

All the top steel producers share this experience, although some more so than others. The main targets for diversification have been those which have some connection with steel as a starting point. Plant construction is a major example and so is energy technology which has become an important adjunct to the steel-making process at several companies.

Steelmaking has no longer the emphasis within the production structure of these companies. It is reflected by the fact that their combined investment in steel in the three years 1977-79 was no more than a single year's investment in the early 1970s. (This is, of course, also due to the low profitability of steelmaking.)

Individual company reports, too, reflect the trend away from steelmaking. Thyssen's latest annual report reveals that steelmaking (including the rising share of special steels, more than one-third of all steel sales in value) now amounts to less than one-third of the concern's sales. Capital equipment and manufactures account for more than a quarter of Thyssen's sales and trading and services to over 40 percent.

Krupp has gone even further, with special steels representing half the value of all steel sales. And, as part of the "fundamental structural change," described by chief executive Heinz Petry, the concern has become "one of Europe's foremost constructors of industrial plants."

The loss making Kloeckner group has also made quick strides toward reducing its dependence on steel, with the manufacturing side (including engineering) increasing its share to 44 per cent of turnover, an almost threefold rise in ten years.

Salzgitter, another major steel group, has extended its interests into turnkey project contracting and, like Krupp, expanded its activities into the earthmoving and conveyor fields as well as in the energy sector.

The Mannesmann group, one of Europe's leading steel tube and pipe manufacturers, furthered its diversification plans by the acquisition during the past decade of the plant and engineering group Demag and the hydraulics specialists Rexroth — while Thyssen has taken over Rhein Stahl and The Budd Company, a U.S. supplier of the automobile and other transport industries.

Tubing, Piping

Dr. Egon Overbeck, chief executive of Mannesmann, could not have put the objective more plainly when he outlined proposals which should take the group to 1983. By that year, he said, nearly half of Mannesmann's world sales should come from engineering and plant construction and only one-third from tubing and piping. Mannesmann has now ceased to produce crude steel for anyone except for use within the group.

Looking to the future, Germans are preoccupied by both the shift in crude steel production from the advanced industrial countries to state trading and less developed countries and the tendency to subsidize loss-making enterprises even within the European Community.

In 1950 the less developed countries only contributed 1 percent of the world's steel output. Last year that share was as high as 13 percent and plans are afoot to increase it further, particularly in the Far East (except in Japan) and in Latin America.

The share of state trading countries (including the Soviet Union) has risen to 26 percent of the total. So in the last 30 years the advanced industrial countries have seen their share of steel sales drop from 70 to 59 percent which includes West Germany's 6.2 percent.

Within the advanced countries Japan is a special case, with a protected home market. Japan imports only 2 percent of its steel requirements compared with West Germany imports of almost 40 percent.

Common Market

In the European Community, too, countries like Italy, Belgium, France and Britain are being accused of subsidizing their ailing steel sectors and so trying to offset, in the German view unfairly, the latter's technological superiority.

Examples of technical progress were listed recently by Dr. Ruprecht Vondran, chief general manager of the country's Iron and Steel Federation. More than three-quarters of West German crude steel is being produced in modern oxygen furnaces which is 10 percent above the community's average.

One-third of all steel is produced by the continuous casting method (one which originated in Germany itself) compared with less than a quarter in the community as a whole. Finally special steels make up one-fifth of all crude steel produced, half as much again as the Community average. There have also been substantial savings in energy use per ton of crude steel produced, particularly of oil.

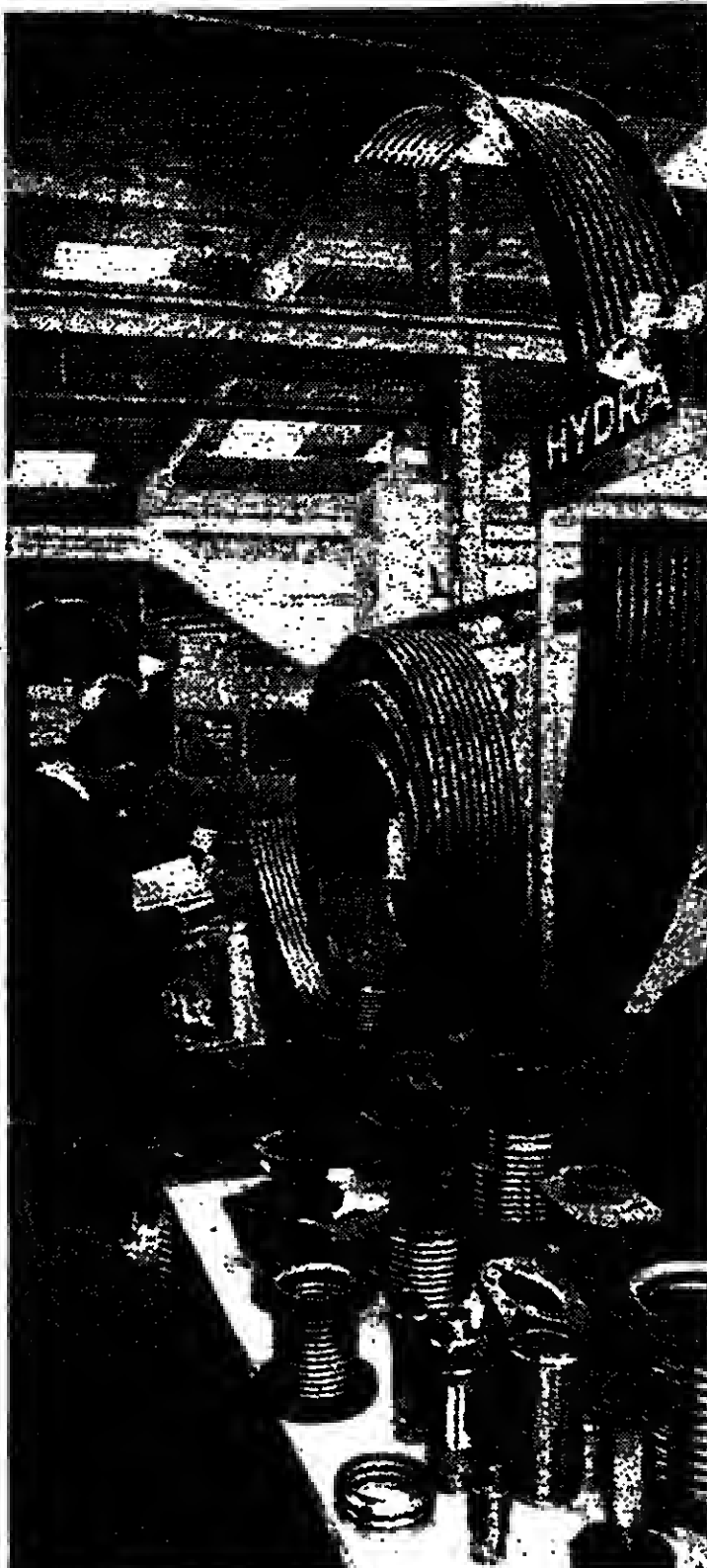
Some leaders of the industry, including Herbert W. Koehler (who is also a deputy in both the West German and European parliaments), would like to see a subsidy code adopted by the community which would eliminate "distortion between state or state-financed companies and private companies." (That is why there was such an outcry when Hoechst, West German member of the Eisel group, received a low-interest loan from the federal government to enhance the technological excellence of a new steel mill.)

Less Worry

West German steelmakers appear to worry less about the possibility of substitute materials, including plastics, displacing steel as a basic material in important industries such as automobiles. Indeed, Prof. H.G. Miessler, a member of the Mannesmann-Demag management board, believes steel is "an inseparable part of the industrialization of our world" and that world production would double by the year 2000.

This should in turn present tremendous opportunities to plant manufacturers, including Mannesmann-Demag, Krupp and other steel producers turning to plant manufacturing and general engineering as a means of diversification.

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Use of Oil Alternatives Grows

Renewable Fuel In Sun, Wind, Tide, Earth

ESSEN (IHT) — While the debate has been raging in West Germany over energy, a number of companies and public utilities have been quietly getting on with the job of providing alternatives in oil, particularly in the heating of homes, offices and public buildings. The latter consume about 45 percent of the electricity supply.

These so-called "renewable" sources of energy — sun, wind, tidal, wave, geothermal — have always been available. But they have been neglected for three reasons: the existence of cheap and abundant fossil fuels such as oil, gas and coal; the promise of almost inexhaustible nuclear energy; and the absence of technology which could turn the renewable phenomena into economical providers of energy.

The validity of all three notions were effectively shattered in the aftermath of the 1973 Middle East war. And the last two decades of this century will certainly see an intensification of effort to replace some of the energy derived from conventional sources by renewable ones. Such new sources also include the use of energy hitherto wasted such as "biomasses" — waste materials from industrial processes — as well as waste heat from power stations and industrial processes, all of which could now be recycled economically by applying modern technology.

Growth Industry

Making use of the sun and other renewable sources have in the last few years developed into a substantial industry. More than 30 of the companies involved now belong to the Association for Solar Energy, including electrical and electronics concerns and three leading public utilities.

The research and technology minister, Volker Hauff, estimates that around 8,000 solar devices for water heating had been installed in West Germany by the end of last year, half of them last year. If heat pumps, which in part use solar energy (as well as the heat of the earth, the air and whatever else happens to provide energy along the circulation route) are added the number of installations may be as high as 20,000.

It is said that by 1978 about 300 West German companies were offering a variety of solar collectors

but some of them had given up since the large concerns — MAN, Brown-Boveri, Siemens, AEG-Telefunken, etc. — had taken it up in a big way. About a dozen companies are engaged in making and selling "sun roofs" which collect and reflect heat not only from the sun (which sometimes shines at inconvenient times) but from the surrounding air flow.

The new solar collector and heat pump systems being developed are used not only for air and water heating but for air conditioning and freezing as well. This year solar collector sales alone are expected to reach 16,000, which would triple the numbers in use.

'Solar Farm'

These devices are, however, largely for individual buildings, including swimming pools and small offices, as well as homes. Moreover, while certainly reducing the power needs of the buildings, their operation still uses up some energy of which gas and diesel oil are the most economical. More ambitious projects include the "solar farm."

A multinational project with a capacity of 500 kilowatt and financed by the International Energy Agency at Almeria, southern Spain, has the West German energy and transport concern MAN as one of its members. Brown-Boveri's output of solar heating units includes one for the Federal Post Office, located at West Germany's highest mountain peak, the Zugspitze.

Wind power has so far received less public attention. But a test generator of 3 megawatt capacity code-named GROWIAN, now being built at Brunsbüttel in northern Germany at a cost of DM 43 million (most of it to be paid by the federal government), may be the forerunner of many more.

Mr. Hauff has hinted that eventually wind may meet as much as 6 percent of the country's electricity needs and the state of Lower Saxony for one has volunteered its coastal areas as prospective sites. All the

same — and despite considerable technical progress in this field — public utilities are sceptical whether the wind generators can ever have more than a marginal effect on the overall electricity supply.

Indeed some utilities suspect that such optimistic forecasts are simply playing into the hands of environmentalists who would resist expansion of nuclear energy under any circumstances.

Waste Materials

Although not strictly in the renewable category, attempts to use waste materials and heat to generate energy are pointing the way toward conserving it on a substantial scale. For example, the recycling plant of BASF, one of West Germany's chemical concerns, at Ludwigshafen on the Rhine, combats the disposal of toxic and other chemical waste — with producing power station fuel which generates an estimated 16 percent of the huge complex's energy requirement. Thus the company saves about 320,000 tons of coal a year, equal to DM 7.5 million of its energy bill.

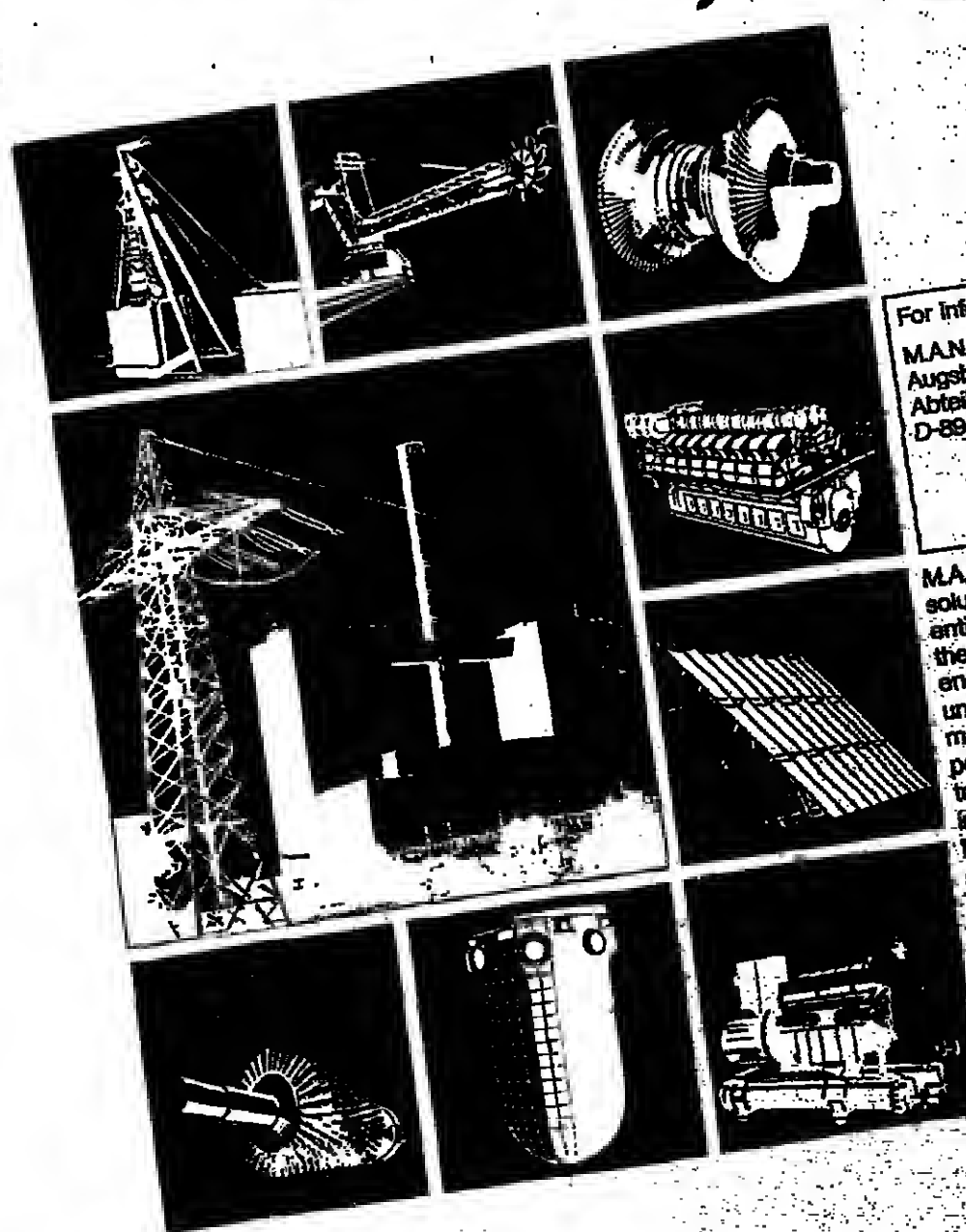
The success of the "heat tracker" in and around the Ruhr city of Essen and at Voithlingen, in the Saar, has encouraged state administrations as well as the major coal enterprises. District heating networks heat from power stations and factories and as especially suitable for densely populated coal-producing areas. The state administration of North Rhine-Westphalia (which includes the Ruhr) has already announced its intention to invest further DM 248 million in extending the network which already supplies 70,000 homes.

Running water, too, is being exploited to drive heat pumps installed in homes in Hanover and along the river Elbe, a tributary of the Rhine. The latter is thought to have sufficient potential to heat 80,000 homes. An experimental plant at Esslingen, which derives power from the Neckar-Rosch canal, already heats nearly 200 homes as well as some workshops.

There are even projects which use the exhaust gases of large engines for home heating, a technology in which the automotive industry is, not surprisingly, also interested.

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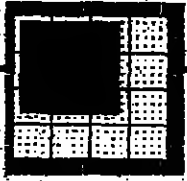
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Slowdown in Energy Demands Is Hoped For in Coming Years

By Andrew Hargrave

BONN (DIT)—Fossil fuels currently meet about 90 percent of the primary energy needs of advanced nations. And even optimistic forecasts of conservation and better utilization combined with increased use of alternative energy sources can't "bridge the gap" on fossil fuels only to around 83 percent by the end of the decade.

In West Germany energy consumption has more than doubled in the past 20 years. However, this period includes several years of high growth which is not likely to recur, at least not in the first half of the 1980s. Given the correlation between economic growth and energy consumption, the increase in demand for energy in the federal republic may rise only modestly in the next few years.

Moreover, as the Battelle Institute of Frankfurt has estimated, an economic growth of 3 percent — which is more than the increase predicted for the present year — could be achieved with a rise of only 2 percent in energy consumption.

This, however, postulates a six-fold increase in investment in energy which is considerably more than at present contemplated by government, industry, and commerce. Most of that investment would be aimed at nuclear power stations, whose North Rhine-Westphalia contribution to consumption (so the authorities hope) should rise fourfold, from 3.3 percent to 13 percent by the end of the decade.

Given the gap of 8 to 10 years between approval and commissioning of nuclear power stations, such a rise could only follow a lessening of environmental and political resistance to nuclear power which has halted the sanctioning of new stations for almost five years.

Hopes on overcoming the stalemate now exist on new plans for power from the Karlsruhe atomic waste disposal and reprocessing — at least on an interim basis — which are regarded as a key to the resumption of the program. (One sign of revived hope is the fact that the contract awarded last month to the Karlsruhe Atomic Waste Disposal and Reprocessing plant, West Germany's first nuclear power station built after the war, for a second 1,200 megawatt station at Osnabrück.)

At the beginning of this year

projects with capacities of more than 35,000 megawatts (18,000 MW for nuclear stations, the rest for coal-fired ones) were awaiting approval.

Another substantial chunk of energy investment goes toward conservation and better use of existing sources. The research and technology minister, Volker Hauff, in announcing government expenditure of DM 10 billion on such projects in the period 1980-83 (it is double the annual rate of investment in the previous eight years), listed some of the progress made in these areas and the potential that still lay ahead.

Taking as an example the use of renewable energy sources, the number of solar devices for water heating — 4,000 in 1978 — doubled last year. He said that the government was promoting demonstrations in public buildings with grants of DM 50 million and Mr. Hauff was hopeful that the devices would be incorporated not only in individual buildings but entire housing projects.

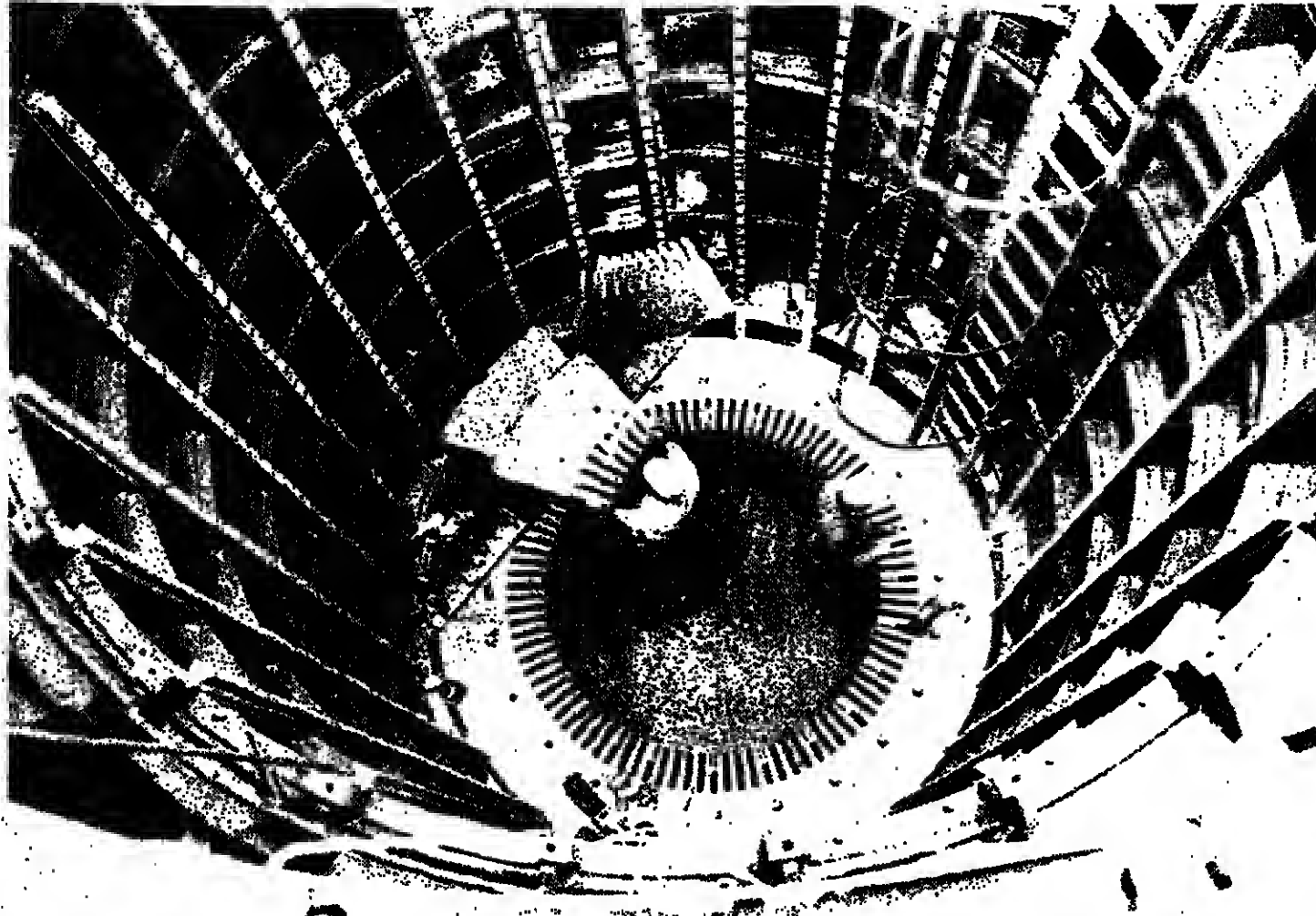
Use of Waste

In thickly populated areas he also foresees the expansion of the use of waste heat in power stations and factories which could lead to a saving in the public power supply of as much as 10 percent of oil consumption. Already in the Ruhr district heating system, he said that 70,000 households saved or substituted 120 million liters of heating oil in 1978-79 which pointed to the extent of potential savings if the systems were expanded.

Electrical appliances, said Mr. Hauff, account for 80 percent of power consumption in the home. According to studies up to 50 percent of consumption could be saved, half of it through the use of microelectronic devices.

In transport, the mixing of coal-based methanol with petrol (which already is the subject of experiments in West Germany — of which more later in this report), and raising its proportion in motor fuel to 15 percent, could save as much as 8 percent of the present petrol consumption.

To promote coal as a substitute for imported oil and gas the government recently announced a long-term program to build 14 coal-refin-



Construction of a turbine for a Brazilian nuclear power station by Kraftwerk Union in Muelheim.

ing (gasification-liquidification) plants costing DM 13 billion.

However, Mr. Hauff warned that even if West Germany's entire coal output were converted into oil and gas, it could reduce the country's dependence on oil imports by only 25 percent.

In other words, there are limits to the use of coal, both hard and soft, which last year contributed 27.7 percent to the country's output of energy. It is not only a question of the economic viability of expanding

home-based resources on the scale envisaged by the Battelle study. Investing the equivalent of 12 percent of the gross social product instead of the present 2 percent might represent a cost to the economy as a whole, particularly to industry which could be prohibitive.

Rolf Sammet, chief executive of the chemical concern Hoechst, recently voiced the fears of many when he spoke of the obstacles, both economic and technical, to substituting coal for oil or gas as a

chemical feedstock, on a large scale. He reckoned that at least three tons of coal would be required to replace one ton of crude oil and considerably more energy used in the process. Moreover, the hydrogen content of crude oil and natural gas products, on the one hand and coal on the other was a more significant factor for feedstock, than the calorific values of the respective fuels. This made coal suitable as a substitute for fuel oil in home or process heating but not as a chemical feedstock.

Prof. Sammet shares the doubts of many of his fellow executives about the government's DM 13 billion long-term coal refining program. It provides for the conversion of 12 million tons of hard coal and 10 million tons of soft coal a year into synthetic natural gas or liquid products. But, said Prof. Sammet, only two or three of the 14 plants were planned as "combined" power stations which would raise the useful heat produced by conventional power stations from the maximum

of 36 percent to 45 percent, and would, at the same time, eliminate the sulphur emission before combustion and so cut operating costs.

According to Prof. Sammet a major priority in a West German energy program should be the best possible use of crude oil itself, combined with conversion plants to replace heavy fuel oil by coal. It might be encouraged by offering tax concessions to the investor. To release coal for oil substitution, nuclear energy should be preferred in electricity generation.

Fears Expressed

Referring to the heavy energy-saving and conserving investment proposals already mentioned, Prof. Sammet — and again many others in his position — fears that this would undermine the competitive position of West German industry vis-à-vis countries — such as France — which derived their energy supplies to a greater extent from relatively more cost-effective nuclear power.

Among those who lend support to this concept is Manfred Lennings, chief executive of the engineering, transport and power group, Gutehoffnungsbetriebe (GHH). He found it appropriate to "cool the euphoria" over liquefied coal as a petrol substitute and urged the federal government to concentrate instead on coal gasification projects which, at least according to one of the companies concerned (Krupp-Koppers) has already reached the stage of producing synthetic natural gas (SNG) as well as gasoline at prices comparable to those prevailing in some countries. Indeed some believe that soft coal-based SNG is already cheaper than such gas produced from heavy fuel oil and may become competitive with natural gas itself in the mid 1980s.

Less Support

There are signs that the government is not unsympathetic toward some of the doubts and fears of industry. A discussion document speaks of possible tax concessions for users of synthetic motor fuel, investment grants for builders of coal-conversion plants, guarantee for minimum prices at selling such products and grants to bridge the cost gap between crude oil and coal-based products.

The idea of a "gas-planting" (along the lines of the "coal-planting" which is being paid by consumers of electricity to underpin the use of home-mined coal in power stations) is likely to attract less support, from industry at any rate.

The document also hints at the possibility of using West German technology — and presumably engineering hardware — at the points of overseas coal production. For example it mentions importing "coal oil" produced in countries with ample and cheaply exploitable coal deposits such as the United States, Canada, Australia and China rather than importing the bulkier and therefore costlier coal itself.

Most studies on the country's energy prospects conclude that an increased contribution from nuclear energy is essential to avoid what threatens to be a substantial energy gap — and a serious risk to continued economic growth — before the end of the present decade.

Limits to Coal

The Berlin Economic Institute calculates that, modest annual increases of 3.6 to 4.2 percent a year in power consumption by 1985 and 3.2 to 3.6 percent increase between 1985-1990, would produce a supply gap of 25,500 megawatts — the difference between the present capacity of 16,000 MW commissioned or under construction and the required 41,500 MW unless nuclear power station construction is resumed soon.

The power supply industry's own association, VDEW, puts the additional nuclear requirement for the decade at a not dissimilar 23,000 MW, of which 9,600 MW should enter the supply network between now and 1985 — a doubtful proposition in spite of the recent check of light represented by the KWU contract. VDEW warns that the often suggested replacement of nuclear capacity by coal-fired stations might be an equally doubtful proposition, partly because of the absence of suitable sites and the difficulties anticipated in obtaining approval.

For government and industry alike therefore the energy problem is one that has to be solved to avoid a threat to the future economic prosperity of the nation as a whole.

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Catching Up With the U.S. and Japan

Silicon Chip Poses Difficult Challenge

By Andrew Hargrave

FRANKFURT (IHT) — At the beginning of the 1970s, microprocessors were yet to enter the West German market. Ten years later it is being swamped. Domestic manufacturers are making determined efforts to catch up with the dominant U.S. and Japanese suppliers.

It is not an easy task. A computer expert has even complained that "the Germans have missed this particular boat." And the research and technology minister, Volker Hauff, was modest enough recently to admit that the objective of West Germany producing 10 percent of its own silicon chips — the heart of the microprocessor — was one yet to be achieved.

A result of this large-scale import of technology is a substantial trading deficit. In 1978, the value of integrated circuits imported to West Germany was almost twice as high as those exported — DM 839 million as against DM 445 million despite the declining value of the dollar.

German industrialists themselves tend to take a philosophical view. The Americans and the Japanese have, they say, stolen the march on the Europeans partly because of their large home markets and partly, in the case of Americans, because of the major role the administration had played in aiding aerospace and defense research. Dr. Horst Nasko, a member of the AEG Telefunken management board, cited as an example the fact that his company had to find 75 percent of its research and development expenditure from its own resources compared, for instance, with General Electric's contribution of only 40 percent.

In the case of Siemens, the country's leading electronics concern, the proportion is even higher. More than 90 percent of the DM 2.7 billion spent on research and development last year, amounting to nearly

10 percent of the corporation's worldwide sales, was financed by the concern itself.

Overall, West German industry is responsible for more than 78 percent of its R&D costs.

Siemens along with AEG Telefunken and Valvo, West German associate of the Dutch Philips group, are among the 10 major corporations fighting it out in the European microprocessor market with IBM, Mostek, Intel, Texas Instruments, Nippon Electric and Hitachi. Hitachi recently announced plans for manufacturing microprocessors at Landshut, Bavaria, with an initial output of 300,000 units a month.

There are five major industries (accounting for nearly 50 percent of all West Germany's exports in manufactured goods) which are most acutely affected by the spread of the microprocessor.

They include engineering, office and data processing, optics and precision instruments, the automobile industry and electronics itself.

Proportions

According to a recent study, the proportion of integrated circuits of all electronic components was 24 percent in the United States and 15 percent in Japan compared with 14 percent in West Germany and 13 percent in Western Europe as a whole.

Another study carried out for the Ministry for Research and Development estimates that in Western Europe alone 5 million microprocessors are likely to be sold this year. In five years it may well be 25 million units, a fivefold increase. Worldwide sales may reach \$24 billion in value this year, a 60 percent rise over the previous year — and this in a stagnant world economy.

Engineering is perhaps the biggest field for microprocessor application — steering, control and supervision which are to replace the, at present still dominant, mechanical or electrical instrumentation. It

involves not only the suppliers and customers but also a range of systems analysts, consultants and contract research organizations.

The latest annual report of the Fraunhofer Society, West Germany's largest contract applied research institute, says, for instance, that processing and production is now both the largest and the fastest growing section in the whole institute. The main areas of the section's activity include control systems technology for machine tools and production plant (including numerical process and energy control) flexible systems for handling assembly, computer assisted construction and operational planning, workshop and equipment layout, interface and safety technology.

One effect on the engineering industry will be, according to Dr. Nasko, a substantial transfer of production business from the equipment manufacturer to the electronic component manufacturer. "The industry is therefore forced, in order to maintain its competitive ability, to pursue growth through new products and not through increased volume production. Consequently the life cycle of products is shortened and this demands flexible management as well as a significant shortening of the time-scale between innovation and market entry."

In other words, nearly half of all the group's products sold in 1978-79 were less than 5 years old compared with under 40 percent five years before when the microprocessor revolution was still in its initial stages.

The spread of microelectronics also means a gradual switch from hardware to software, from analogue to digital technology in research and development as well as the development of complex systems instead of individual components. Data processing, storage and peripherals will become essential parts of the manufacturing setup.

Revolution Is Looming In Telecommunications

MUNICH (IHT) — Technologies already known but not yet in general use promise to revolutionize communications in the 1980s.

This will have many facets, including vast improvements in long-distance communications — telephone, telegraph and telex. Words and pictures will be sent by facsimile and the "electronic newspaper" will appear on the domestic TV screen. Optical fiber will be substituted for copper cable and there will be still more kinds of personal word-processing, dictating and copying devices.

Making all these advances possible are the semiconductor and microprocessor. As far as West German manufacturers are concerned, adaptations to, and improvements on American devices and techniques, and — in some cases — innovations stem largely from research and development by private enterprise.

In telecommunications, the biggest event is the Federal Post Office's decision to switch the telephone system from an analogue to a digital network.

There will be six demonstration exchanges in 1982. The first series of digital exchanges is expected to be in operation in 1985, supported by the optical glass fiber transmission system which enables a spectacular increase in the number of simultaneous telephone conversations to be carried by a single cable. (The system, developed by Siemens, is now on trial in Frankfurt and Berlin). However, the complete changeover of the 3,000 West German exchanges is likely to take decades.

The essence of digital technology is the conversion of voice signals into a code which is then processed by the computer. It is simple and virtually free of interference due to microelectronics and, so far at any rate, wire-tapping-proof. (Whether it is to remain so, is another question. Each new technology has up to now managed to provoke its counter-technology.)

Siemens is about to begin installing such systems in several foreign countries, including Finland, Argentina, Libya and South Africa.

Inside offices, department stores and factories, a system of microprocessor, stored-program telephone exchanges is being introduced, again by Siemens among others.

Orders of more than DM 250 million had been booked by the corporation by the end of last year, including one from the European Commission in Brussels providing for 20,000 extensions.

Microelectronics are bringing similar improvements in the teleprinter (both text and pictures) and in data communications, including the storing and automatic recalling of information.

West Germany has fallen behind other countries, including the United States, Britain and France in the introduction of teletext. This is the "electronic newspaper" which can be plugged into the existing TV sets of subscribers for news, air and rail timetables, stock exchange quotations, weather reports and other items. Field testing with 6,000 participants, is to start this year in the Berlin and Düsseldorf.

—A.H.

Microcomputer Trend Growing

FRANKFURT (IHT) — Of the 171,000 computers operating in West Germany at the beginning of last year, three-quarters — 128,500 — belong to the microcomputer or semi-independent terminal category.

According to estimates by the Diebold data-processing consultants, A further 21,800 were somewhat larger minicomputers while the 20,620 universal computers, just 12 percent of the total, were valued at more than DM 25 billion or 70 percent of all computers (valued at DM 35.8 billion) installed in West Germany.

The estimates also showed that of the 19,000 computers installed during 1978 (a 20 percent increase over the previous year), 80 percent were in the microcomputer or semi-independent terminal category, 12 percent were minicomputers and only 8 percent universal computers.

The trend is unmistakable. In a paper published recently, three scientists at the Fraunhofer Society (Prof. H. J. Warnecke, Dr. H. J. Bullinger and Rolf Schlach) predict that the number of office computers costing up to DM 250,000 apiece will treble by 1985, equaling 250,000 computers and nearly 1 million terminals.

Process Control

Diebold's earlier figures for orders for the various types of computers confirm such an increase. During 1978, orders for universal and office computers in West Germany rose by 15 to 20 percent, those for minicomputer and process control by 20 to 25 percent and for terminals by 30 to 40 percent.

However, not all or even the major part of these new installations and orders have benefited the domestic computer industry. Although in the first half of last year domestic output of data-processing devices rose by 5.1 percent to DM 2.66 billion (according to the industry's trade association VDMA), of which more than half was exported, imports, valued at DM 1.97 billion exceeded exports by nearly DM 500

million and rose by 41.6 percent compared with the same period in 1978.

Of home market sales of DM 3.9 billion (including office equipment) in the first half of last year, imports took a share almost two-thirds. This underlines the continuing impact of foreign — U.S., Japanese and European — producers in West Germany's computer market. In one single important sector — semiconductors — imports exceeded exports by almost two to one in 1978.

The sweeping advance in microelectronics has, of course, profoundly influenced the data-processing market, both in West Germany and worldwide. The West German attitude toward the initial lead gained by the United States and Japan was summed up in a recent magazine interview by Dr. Friedrich Baur, a member of the management board of Siemens. "Years ago when the microcomputer was first introduced, Germany had nothing to offer; but its significance for the future was clear."

"So we had a choice of strategies — to initiate or to follow. Had we followed the first strategy, we might have gone as far in 10 years as we stand today, but the expense would have been very high. This applies to all Europeans. But with the 'follower-strategy,' we are catching up fast."

An aspect of this catching-up process is the purchase of, participation in or cooperation with known market leaders. For example, Siemens has been exchanging ideas with the U.S. computer firm Intel and manufacturers Intel processors. The concern has bought 17 percent of the equity of the Advanced Micro Devices Corp. and started up a joint manufacturing facility; and, more recently, announced an agreement with the Western Digital Corporation (also from the United States) for the manufacture of "floppy disk" control components.

AEG Telefunken has also strengthened its computer activities by acquiring a 25 percent share in

Modular Computer Systems (MODCOMP) and also setting up a joint company with the U.S. corporation for the manufacture in West Germany of process control systems. The new company, in which AEG Telefunken will have a 75 percent share, also provides a product service for the systems.

The approach by Nindorf, a much smaller but fast-growing company, places the emphasis not so much on innovation in devices but in their application and the creation of systems.

These are particularly appropriate for small and medium-sized companies but also in linking or fitting in with universal computers manufactured by the bigger companies such as IBM, Honeywell-Bull, Control Data, Sperry Rand, and Nippon Electric, within a total system network.

The Nindorf strategy, certainly, seems to have paid off in its sales, have doubled in the past five years to DM 1.25 billion last year, with its U.S. associate, too, reaching a turnover of \$100 million, an increase of 25 percent over 1978.

An important aspect of the Nindorf strategy is the extremely high proportion of technical staff engaged in installing and servicing hardware, almost two-thirds of the entire personnel of 11,500.

The company's philosophy, as expressed by deputy chairman Klaus Luft, is to enable the computer and data processing in general to be fitted into the customers' existing organization rather than to be imposed. The Nindorf policy of decentralizing data processing through terminal networks within an organization — banks, stores, local government units, etc. — is to bridge the technological gap between larger and smaller systems. This, says Mr. Luft, makes the computer accessible to smaller companies and at the same time, enables larger companies, too, to improve their communications with their branches and associates.

—A.H.

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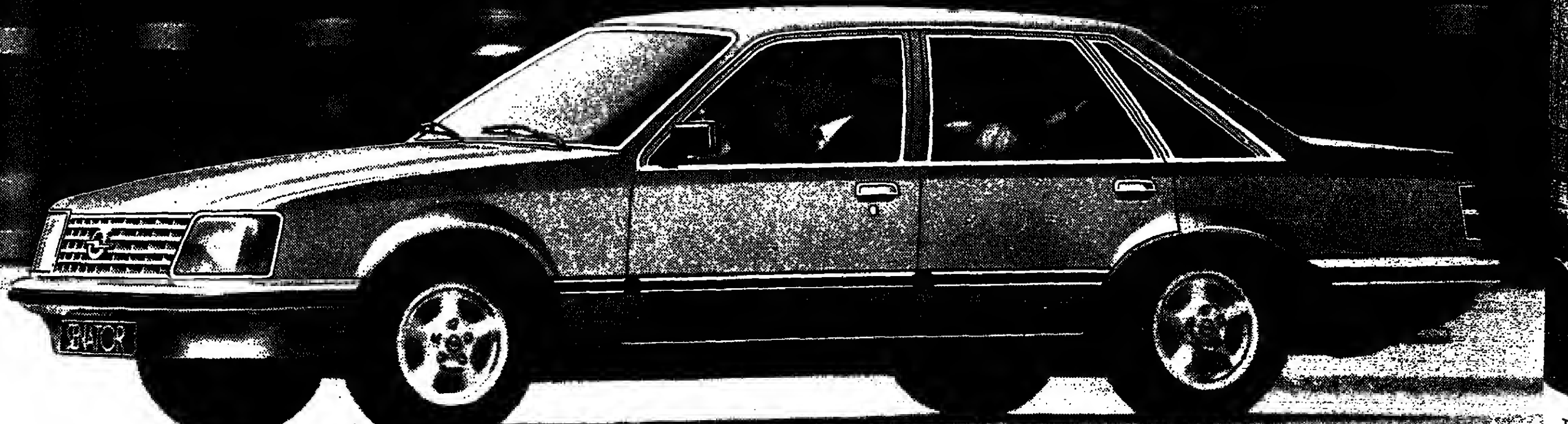
The Senator's optional 5-speed manual transmission has a top gear which lowers engine revolutions at a given road speed, thereby reducing fuel consumption and mechanical wear.

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The illustration features the Senator C. Technical data: 2.8 S engine, 103 kW (140 HP), 3.0 S engine, 110 kW (150 HP), 3.0 E engine, 132 kW (180 HP). Fuel consumption for 3.0 E engine (l/100 km): at 90 km/h 8.8 l/100 km, at 120 km/h 11.2 l/100 km, city driving 16.0 l/100 km (Standard DIN - liters/100 km - for 4 speed manual transmission).

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Opel Senator

Duerr Rules at AEG

By Andrew Hargrave

FRANKFURT (IHT) — Until the middle of January, Heinz Duerr, 46, was little known outside the state of Baden-Wuerttemberg, or its capital, the Schwabian city of Stuttgart.

It is true that the family firm he took over as sole chief in 1967 achieved a respectable turnover of DM 370 million last year and was employing 3,000 people, and that for some years he had been a tough but widely respected negotiator leading the local metal industries in discussions with IG-Metall, the world's largest trade union. Never-

theless, when the troubled AEG Telefunken's new board chairman, Dr. Hans Friderichs, named Mr. Duerr, as chief executive within minutes of taking the chair Jan. 15, there was an audible gasp of surprise in the industrial community and not a few "Heinz Whos?"



Heinz Duerr

There could be no greater contrast, however, between Mr. Duerr and his predecessor, the knowledgeable, tough but somewhat dour Dr. Walter Cipa, whose regime foundered on industrial relations. For Mr. Duerr products are second to people.

He claims to have known personally a large proportion of the employees in the Duerr group and his first act after taking on the AEG job was to start visiting its 80 factories, hoping that his friendly face, his optimism and, not least his unmistakable local Schwabian accent will bring him closer to the concern's 150,000 workers.

"I am used to working in a democratic group," he said, referring to his experience as a negotiator. "My job is not to dictate, but to persuade."

With his experience as head of a family firm, Mr. Duerr's main problem appears to be not the complexity of AEG Telefunken but his natural inclination to keep all the reins in his own hand: "I'll have to discipline myself and learn how to delegate," he admitted ruefully.

Mr. Duerr gives the impression that he will learn fast. AEG Telefunken's huge capital reconstruction following a disastrous loss of DM 960 million last year was carried out by a bank consortium led by Dr. Friderichs' Dresdner Bank, which is certain to keep a close eye on the new Mr. Duerr, particularly in the first year.

So, apart from his own management board which contains people with long experience both in their own spheres and of AEG itself, he will have to cope with the bankers looking for quick results. Nor can he expect lenience from Dr. Friderichs, the former federal economics minister, who must be just as concerned justifying his own personal choice — or else.

Moreover, Mr. Duerr has inherited the "Cipa plan" which includes the shedding of 13,000 employees and the closure of some unprofitable works. The plan may be sound in financial terms but runs counter to Mr. Duerr's own instinct of having people as his first priority. Yet he does not underestimate the importance of products which figure very highly in his vision of the future.



Using computer for quality control at Grundig.

DM 21 Billion Was Spent On R&D Projects in '79

(Continued on Page 155)

alized concerns with a high ratio of overseas investment.

In the chemical industry, almost 10 percent of all employees (more than 50,000) are engaged in R&D, and make up well over a quarter of all West German R&D personnel.

The industry is dominated by the big three — Bayer, Hoechst, BASF — which are among the world's top five chemical concerns, the other two being Du Pont of the United States, and ICI of Britain. Research costs are particularly heavy in the pharmaceutical sector, which contains, in addition to the big three, such international firms such as Schering, Merck, Boehringer of Mannheim and Ingelheim. Research expenditure could amount to as much as 15 to 20 percent of turnover, and it is reckoned that developing a single new drug may cost as much as DM 90 million.

The electrical/electronics sector is dominated by Siemens and AEG-Telefunken, though it also contains a number of successful smaller firms. R&D expenditure by Siemens reached DM 2.7 billion, or 9 percent of sales, in 1978-79. AEG-Telefunken, in spite of heavy losses

that culminated in a drastic last-minute institutional support operation toward the end of last year, spent DM 1 billion, or 7 percent of its sales, on R&D last year. AEG intends to increase R&D expenditure by a further 10 percent in 1980 despite severe cost-cutting in other sectors of the business.

The significance of R&D is further underlined by the speed in worldwide product development, particularly in the electronics sector. While in 1965 only 10 percent of sales consisted of products less than 10 years old, by 1977 the proportion rose to 40 percent, and it is still rising fast.

The silicon chip and microprocessor technology has further accelerated the process. In the case of Siemens, more than 40 percent of the sales today comprise products less than five years old. The effect on the user industries, including engineering and the automotive industry, has been spectacular. It is fueled above all by sharp international competition, particularly from the United States and Japan but also from France, Italy, Britain and some newly industrialized countries.

—A.H.

Aircraft Sector Faces Profound Changes

MUNICH (IHT) — The West German aircraft industry, modest in global terms because of a 10-year hiatus after World War II, is expected to undergo profound organizational changes over the next few years.

There are two main reasons: the breakup of the German-Dutch aircraft group VFW-Fokker; and the need to build on the success of the wide-bodied airliner Airbus in the face of fierce competition, particularly from the United States.

The national components of VFW-Fokker have already begun their independent existence but there are formidable difficulties in merging — as both the federal government and Messerschmitt-Boelkow-Blohm (MBB) would dearly wish — VFW with the latter.

The main stumbling block seems to be the 35 percent stock held in the defunct VFW-Fokker by the steel-and-engineering group Krupp which United Technologies, a U.S. corporation with a 26 percent holding, is keen on acquiring. The combined stock would give the Americans a dominant voice in VFW and a strong one in a merged MBB-VFW, an outcome neither the government nor MBB are likely to welcome.

United Technologies is among others a supplier of aircraft components. A large stake in the West German aircraft industry could create a U.S. foothold not only in the European civil aircraft industry but also in its defense market.

Leading Exponent

MBB already is among the leading exponents of air and space travel in Europe. It supplies almost one-third of Airbus Industrie's A-300, the wide-bodied medium-haul, twin-engine aircraft, including most of the body and the interiors. The three-nation corporation has already received around 200 firm orders as well as 800 optional ones for the A-300 of which 100 are already flying.

At the beginning of the year, there were also 63 firm orders and 66 options for its smaller version, the A-310 which is due to go into service in 1982-83.

Airbus Industrie reckons it may sell 500 more in the next 10-15 years in addition to the 404 orders and options it holds for the two aircraft.

The active life of an aircraft model is estimated to be around 20 years, to which should be added about 10 years of development work. Airbus Industrie, including

MBB, is at present studying three options, one of which is a "stretched" version of the original A-300, accommodating up to 300 passengers instead of the present 250.

A second option is for a smaller, short-to-medium haul aircraft, narrow bodied and seating around 150 persons, fewer than the 200 capacity of the A-310.

Third Study

A third study concerns a three or four-engine, long-range aircraft with a seating capacity up to 200. In other words more economical for routes of more than 6,000 miles with lower passenger densities than the Boeing-747s, Tri-Star-500s or DC-10s.

But while decision on the first two studies, particularly the first one, may be made in the next few years, the third option concerns the aircraft requirements of the 1990s, possibly beyond. (A new urgency may of course be injected into the industry by the escalating prices of aviation fuel, demanding greater economy in consumption.)

Prof. Gero Madelung, chief executive of MBB, has no doubt himself

that the Europeans are having to broaden the range of their passenger aircraft further "as part of our strategy in facing competition, particularly from the U.S."

Although the official merger of MBB-VFW may be delayed, the two companies are cooperating in many areas, including the Airbus, the multinational Tornado jet fighter and various European space projects. MBB itself is involved, with other German companies, in several such projects including Spacelab, the rocket project Ariane, television, weather and communications satellites, etc.

Although MBB is not large by world standards, it is broadly-based — one of the few aircraft companies in the world manufacturing its own helicopters (in cooperation with Kawasaki, of Japan). A blueprint of a future generation of transport helicopters, in cooperation with French, British and Italian companies, is already on the drawing board.

The technological excellence of MBB has been acknowledged in the U.S. magazine Aviation Week and Space Technology, which puts the West German concern among the

leaders in Europe employing computerized manufacturing techniques.

A very high proportion, around 90 percent of MBB's 22,000 employees are engaged in research and development. As well over 50 percent of the company's work involves defense, much of it is funded by the federal government. However, Prof. Madelung emphasizes that it spends between DM 35 million and DM 50 million a year of its own resources on future development including projects such as the transport helicopter.

Government financing of aerospace technology is itself being stepped up considerably over the period 1980-82. The federal contribution of DM 1.3 billion (40 percent up on the previous four years) is to be supplemented by the state administrations by a further DM 400 million. About half the Government contribution will be spent in the civil sector, in particular to prove the viability of the Airbus reduced weight, lower fuel consumption and economies in production.

—A.H.

Economic Miracle Seen Slowing Down

(Continued from Page 15)

cent development. The United States (the largest recipient), France, Belgium-Luxembourg, Switzerland and Brazil are the most popular outlets for German capital.

Among the main industries, the leaders in foreign investment are chemicals, electrical/electronics, iron and steel, engineering, oil exploration and processing, and the automotive industry. Financial institutions such as banks and insurance companies also are substantial investors of German capital abroad.

Foreign trade is the lifeblood of West German industry. With exports accounting for between a quarter and a third of the country's industrial output, while about 15 percent of world trade is invoiced in Deutsche marks (second highest after the U.S. dollar), the stakes are understandably high.

The bulk of West German industry's research and development is applied, as opposed to basic, which, supported by innovation, is a powerful weapon in the battle for continued prosperity. And it is not only the giants who wage it. Small and medium-size firms increasingly

receive official backing and are now part of the battle.

Nevertheless, in spite of the temptation to match subsidization by trading rivals, and instances — such as aerospace, hard coal and shipbuilding — where subsidies are actually given, West Germany remains an open market. Government contracts and other forms of official aid are less than 22 percent of what is spent by industry on research and development, despite a continuing increase in the government's expenditure on such aid.

Open Market

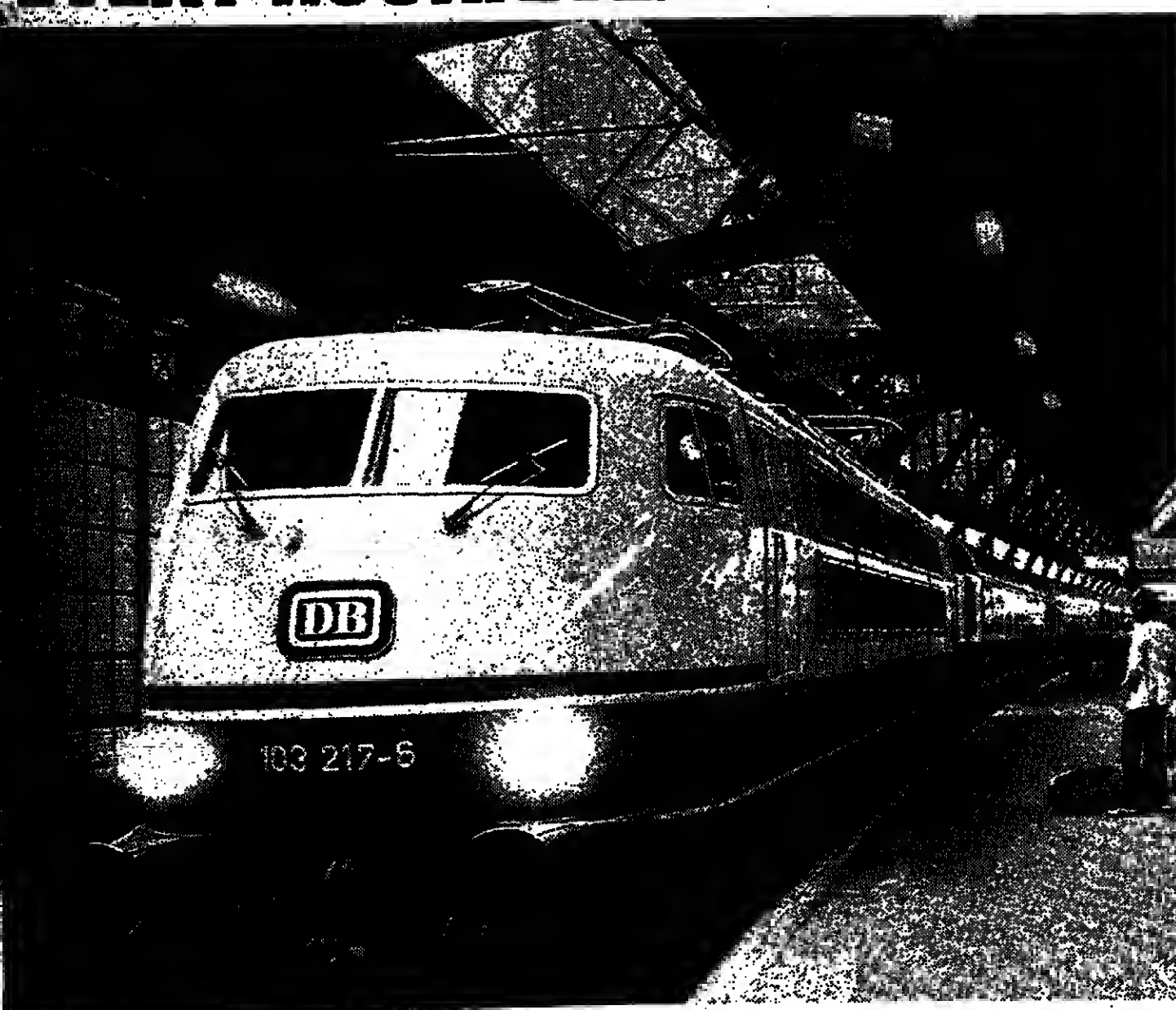
In addition to energy, one of the government's major interests is promoting and encouraging Social expansion in data processing, an area in which West Germany still lags behind the United States and Japan, both in software and applications. Egon Overbeck, chief executive of the steel and engineering group Mannesmann, is not alone in suggesting that while Europeans managed to adapt and even improve upon technologies originating in the United States, U.S. domina-

tion is not likely to be ended in the foreseeable future in such fields as reactor techniques, aircraft construction, communications and semiconductor technologies.

Still, West Germany has a high standing in applied research and development among the industrialized nations. A recent survey by the Institut der Deutschen Wirtschaft (German Economic Institute) places West Germany second after the United States in research and development spending per capita.

In terms of share of the gross national, or social, product spent on research and development, the institute places Germany (at 1.9 percent of the GSP spent) third after the United States (2.1 percent) and the Netherlands (2 percent). But also notes that in 1971-78, the rate of growth in research and development expenditure followed the composite course. The United States and Germany produced the smallest annual increases (6.6 and 5 percent respectively) compared with Italy (15 percent), France (14 percent), Japan and Britain (13 percent each). The gap between the leaders and the laggards is narrowing.

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Currency	Equivalent of DM 100	Invested at formation of UNIFONDS	Equivalent of DM 100	Value of shares at the redemption price	Performance in %
		on 12th April 1956		on 31st December 1979	
Deutsche Mark	—	10,000.—	—	60,594.36	+ 505.9
US Dollar	23.81	2,380.95	57.75	34,993.24	+ 1,369.7
Pound Sterling	8.50	850.34	25.95	15,724.24	+ 1,749.2
Swiss Franc	104.11	10,411.47	92.25	55,898.30	+ 436.9
Belgian Franc	1,180.46	118,046	1,817.34	980,017	+ 723.2
French Franc	83.33	8,333.33	232.69	141,178.80	+ 1,594.1
Dutch Florin	90.48	9,047.62	110.02	66,665.91	+ 836.8
Italian Lira	14,865	1,486,547	46,577	28,225,035	+ 1,798.6
Austrian Schilling	819.05	81,904.94	719.94	436,243.04	+ 604.7
Japanese Yen	8,571	857,118	13,931	8,380,806	+ 877.8

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Sender

Pollution Control Becomes Industry

By Andrew Hargrave

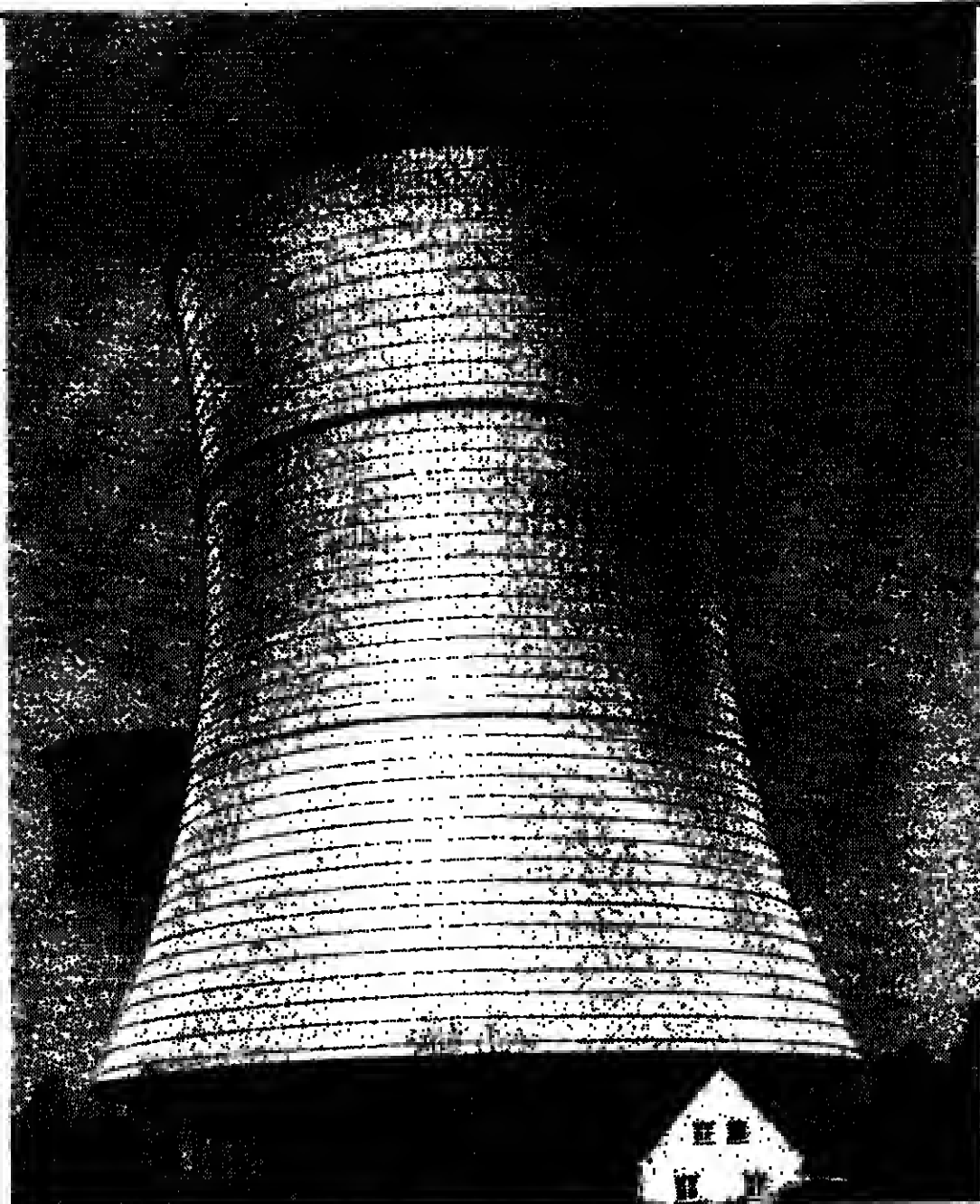
ESSEN (IHT) — To industry pollution and noise control regulations seem an irksome, costly necessity, a drag on company profitability. To environmentalists, industry seems an irksome, costly necessity, a drag on the enjoyment of the "full life." West German authorities are caught between these opposing tides and the results are sometimes odd to say the least.

An extreme example has been the virtual halt to new nuclear — and, to a certain extent, coal-fired — power station-building for several years now. But the cost of pollution and noise control to industry has also increased considerably in the past decade, especially in those branches which are the original sinners against the environment — coal mining, chemicals, iron and steel making.

In these industries, around one-eighth of the investment is now going into pollution control. The food, drink and tobacco industry, too, has increased its investment and is now estimated to approach 8 percent of the outlay.

Overall, West German industry is estimated to have spent more than DM 50 billion, more than 1 percent of the gross social product, on pollution control in the past decade. And this takes no account of sums spent by companies and individual citizens on, for example, emission in motor vehicles. Moreover, it is believed that operating costs may in time exceed the original investment in capital equipment, in a ratio of up to three-to-one.

These operating costs are likely to increase further next year when levies on effluent discharge are expected to take effect. A bill before the federal parliament would, for instance, force the chemical industry to have all its new products examined for possible harmful effects on the environment. Chemicals already in use may also be submitted



Aluminum skin gleams on cooling tower of nuclear power plant near Dortmund.

to such a procedure if there is a hint of harmful effects.

Indeed Prof. Matthias Seefelder, vice-president of the chemical manufacturers association, in giving evidence to a parliamentary committee complained that this was the first time that a major industry would be asked to submit to such a procedure.

Professor Seefelder suggested that legislation and regulation should be harmonized at least throughout Europe, so that West German industry should not be handicapped in international competition.

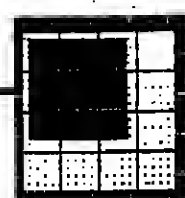
Pollution control is also costly for the steelmakers. At a convention last year F. J. Weisweiler, a member of the Mannesmann management board, estimated the cost at DM 27 for every ton of crude steel produced — or more than DM 100 million a year for the group's output of 4 million tons.

To filter dust arising from production in just one of the concern's steelworks costs DM 34 million, or DM 32,000 for every ton of dust filtered.

However, pollution control itself is a major industry in West Germany, often providing work within the

very group which has to spend millions on installing the equipment. For example, Demag, a member of the Mannesmann group, is itself a specialist manufacturer of dust control equipment, for steel mills and cement works in particular.

Emission control in the motor industry is also testing the ingenuity of the manufacturers. It is estimated that in the last decade exhaust gas and noise have each been reduced by 10 percent. Much greater advances are likely, partly because of tighter regulations in the U.S. which are likely to be duplicated in Europe.



Nixdorf's Philosophy

PADERBORN (IHT) — Heinz Nixdorf, 55, was still a student in 1952 when he turned his not inconsiderable mind to a burgeoning industry of the future. His laboratory serviced and later supplied components to office machinery manufacturers, both West German and foreign. But it was not until 16 years later that he set up his own computer company and not until 1978 that his sales broke through the magic DM 1 billion barrier. (They rose by a further 23 percent last year).

His philosophy is simple: Computers, particularly supported by semiconductors, are ideal for the "democratization" as well as decentralization of communications and decision making in a world that is in a danger of becoming too centralized and complex through the very existence of the computer itself.

Moreover computers are complex and fast-changing devices where advice, installation, instruction, after-sales service, maintenance and repair are at least as essential as their reliability, durability and ease of handling.

So Nixdorf AG, of which Mr. Nixdorf is the head and the main shareholder, has been concentrating on developing systems for the decentralization of large organizations (often linking in with central computers provided by IBM and other big mainframe manufacturers) as well as for smaller ones which had up to then been hesitant to use computers at all.

Comfort-Ergonomy

Nixdorf seeks to beat its rivals by selling not only hardware but systems, and not only systems but service, not only service but comfort-ergonomy.

That is why nearly two-thirds of his labor force of 11,500 (of whom 1,600 work in the United States) are engaged in servicing customers. This is Mr. Nixdorf's way of acquiring, keeping and increasing them in the face of ferocious competition from gigantic rivals in the United States, Japan and Europe.

Only once did Mr. Nixdorf diverge from this course. He set up a company for the manufacture of a large mainframe computer in partnership with AEG Telefunken. The attempt to compete with the IBMs, Honeywells, NCRs, Sperry Unives in this field, even in the limited sector of computers for universities,

was a dismal failure and dissolved in the mid-1970s.

Since then while Nixdorf AG has been slowly edging its way upward in systems sizes and prices, Mr. Nixdorf himself gets slightly irritated when pestered about his intention to break back into the mainframe market.

"It is still an open question," he said recently. "We have always followed the trend upwards. But at the moment our manufacturing capacities are so full that it would be foolish to seek new markets while neglecting existing and successful ones."

He seems unconcerned about the increasing invasion of the office, national and local government segments (in which Nixdorf AG claims a lead) by the "big boys," the Americans, the Japanese, as well as Europeans like Siemens and Philips. Nor is he particularly interested in manufacturing silicon chips, though he often refers to the first one-cell microprocessor in Europe, which, he claims, was developed in 1972 from a U.S. licence. There are, he says "enough chip producers eager to supply us."

Nixdorf AG is a member of a purchasing group STACK which includes Control Data, ICL, Plessey and Olivetti and also has a know-how exchange agreement with a Japanese firm. But basically Heinz Nixdorf himself is a "loner," unwilling to relinquish the rein even to a limited extent.

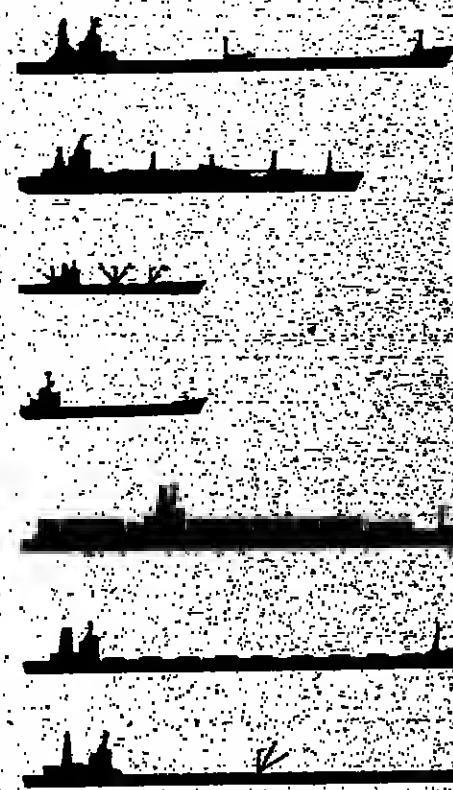
The big challenge occurred toward the end of 1978 after he won the market prize awarded annually by the German Marketing Association "for the democratization of data processing." Volkswagen, one of the world's leading automobile corporations, had some spare money to invest. It was also keen on gaining expertise in the "electronization" of automobiles and bid for a large holding in Nixdorf AG.

Nixdorf (VW guessed rightly) was somewhat under-capitalized for fast growth. But Mr. Nixdorf resisted and was eventually, backed by the Deutsche Bank, West Germany's top commercial bank, which still has 25 percent of the company's equity.

Until recently Nixdorf had not touched the bank's DM 200 million capital infusion and financed necessary investments from the company's resources.

—A.H.

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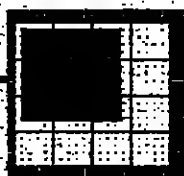
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Natural Gas Revival Intensifies

By Andrew Hargrave

OSSEN (IHT) — The discovery of natural gas in Lower Saxony — brought about in the mid-1970s a considerable shift in favor of gas within the overall energy pattern of West Germany.

The revival of gas as a major source of energy was further strengthened by the discovery of gas fields in the northern North Sea, the presence and exploitability of associated oil wells, a vast network of gas pipelines, efficient transport of liquefied natural gas (LNG), and, more recently, improvements in the technology of producing synthetic natural gas (SNG) from coal, including the Wuppertal and in West Germany abundant soft coal (lignite) deposits.

As recently as in 1967, gas provided a mere 1.5 percent of West Germany's primary energy requirements. By 1970 it rose to 3.4 percent and last year the contribution of natural gas reached 16 percent of its entire primary-energy market. Almost half the supply was taken by industry (with the iron and steel and chemical industries by far the largest users, consuming about two-thirds of gas used in industry as a whole), around a quarter in power stations, and nearly a fifth in the home and in commerce.

However, the steadily growing use of gas in the West German energy market has in recent years been achieved almost entirely by an increase in imports. Home-produced gas increased its share only slightly to around 6 percent between 1973 and last year. Imported gas, mainly from the Netherlands and Norway (but also from the Soviet Union and Algeria among others) has increased its share from 4.4 percent to 10 percent during the same period.

Altogether more than two-thirds of the natural gas delivered in the

federal republic last year came from abroad.

Natural gas from the Netherlands and the North Sea is expected to increase throughout the current decade, especially at the expense of (also imported, but largely from the less stable Middle East) crude oil. OIL's share, the authorities hope, should decline by fully one-fifth, to around 40 percent of the total primary energy consumption by 1990.

Future supplies of gas will also be boosted by the recent multinational contract with Nigeria for deliveries of liquid natural gas (LNG) in the early 1980s. After 1990, the prospects for gas are less clear. Table 1 below gives one estimate, by the World Energy Conference of 1978, on the respective reserves and consumption of the world's three main fossil fuels — coal, oil and gas.

There is therefore serious imbalance between the available reserves of each of these vital fuels and their exploitation, particularly that of gas. Even if one considers the substantial amounts of gas which are at present flared off offshore well (some of which could be captured and either piped ashore or liquefied and transported off the well itself) natural gas has a limited lifespan. The best and most economical substitutes appear to be synthetic natural gas (SNG) to be won from coal, hard or soft, especially as gas, with a heat loss averaging only 25 percent, is a very economical fuel.

The subject of gasification has already been discussed in the article on coal. However it is worth repeating that in the view of some experts SNG distilled from soft coal is already cheaper than gas won from fuel oil and may compete with natural gas itself by the mid-1980s, especially if the real price rises at an annual rate of at least 2 percent, which it probably will.

There are at present two major plants in West Germany for the gasification of coal. One is the Ruhr 100 operated jointly by Ruhrgas, the

its power station subsidiary Steag, and Ruhrgas, the country's leading gas utility, with 75 percent support from the federal government. In its first phase it will process 1 million tons of hard coal a year to produce 500 million cubic meters of SNG.

It is eventually to be trebled in size (at the cost of DM 1.8 billion) and integrated at a later stage with a high temperature nuclear reactor to produce steam.

Proven Process

A second major gasification plant is to process 1 million tons of soft coal a year to deliver SNG for the production of methanol in chemical works. It will cost around DM 600 million and be located in the Rhine district where recoverable reserves of several billion tons of soft coal exist. Gasification will be based on the already proven Winkler process developed by Rheinbraun, a subsidiary of the public utility RWE, which has been operating an experimental facility (with a throughput of 1 ton of soft coal an hour) at Frechen, since 1978.

As for the recovery of gas from hitherto uneconomical offshore fields, the north German steel and engineering concern Salzgitter is developing (in conjunction with the French company FMC) a loading system for LNG and liquid petroleum gas (LPG) between production platform and tanker.

The system, which Salzgitter says will be on offer in 1981-82, would enable the economic exploitation of smaller fields, including associated gas from oil wells flared off up to now, without the necessity of laying expensive pipelines to shore.

Salzgitter claims that about 60 percent of the estimated natural gas reserves in the North Sea south of the 62 parallel — equivalent to five times the present natural gas consumption of West Germany — would remain unusable without the development of a loading system such as the one on offer.

Europeans Joining Forces Against Asian Electronics

NUREMBERG (IHT) — Competition from the Far East, particularly from Japan, is increasingly forcing Europeans in the consumer electronics market to join forces.

The most recent example of such cooperation is the Video 2000 system developed jointly by Philips, the Netherlands group already strongly entrenched in the federal republic, and the country's native specialist Grundig which still claims a quarter-plus share in the domestic color television market. They are thus taking on Sony and Matsushita-JVC. All three offer incompatible tapes and are therefore not interchangeable.

Philips has acquired a 24.5 percent share in Grundig following the semiretirement of its founder and chief executive, the independent-minded Max Grundig, who is now "president for life."

The Video 2000 is being manufactured in West Germany at Grundig's new Nuremberg factory. Sales are, in addition to Philips and Grundig, also conducted through the network of the Siemens group which is also negotiating for the manufacturing rights of the video-recorder.

'Super' Recorder

It was at this factory 18 months ago that Grundig launched its own "super" home videotape recorder with a maximum running time of four hours and a capability of "storing" two programs for up to 10 days.

Last year Grundig followed up the recorder with a color TV projector which, it claimed, was ahead of its rivals in enlarging by an extremely clear projection pictures sixfold the 66 centimeter TV screen. The projector may be connected to video-recorders, cassettes, television cameras as well as to loudspeakers for larger audiences in halls.

The biggest single domestic manufacturer in this fiercely competitive market (sales in Germany approach DM 10 billion a year) is AEG Telefunken, the latter part of the title recalling a once-world leader in television and radio.

Stagnation in the concern's sales volume last year, exaggerated by the declining export prices (in terms of the strong Deutsche mark) have not yet been compensated by any advance in the relatively small audio-visual field.

Siemens, too, has a strong foothold in consumer electronics in Polygram, another Dutch-German company involving Philips, with manufacturing facilities in both countries. It is strong on music with its main business being phonograph records, cassettes, sound recording in general as well as audio-visual material. Stagnating sales, particularly in the U.S. market, have exercised a strong pressure on profits.

To counter worldwide competition, West German companies have enlisted both technology and service which, they hope, will to some extent offset the price advantages being offered by low-cost rivals.

Power Shortages Are Feared

Nuclear Plant Curb Adds to Energy Gap

FRANKFURT (IHT) — For several years power station constructors have been warning of the danger of electricity shortages in the mid-1980s if the curb on allowing nuclear plants to be built were allowed to continue.

The decision by the Lower Saxony administration last May to refuse permission for an atomic waste disposal and reprocessing plant at Gorleben was a serious blow to the hopes of government, industry and public utilities as these facilities are a precondition to building further nuclear power stations.

To allay public fears and overcome resistance, legislation has been introduced to the effect that after 1985 no nuclear power stations may be approved unless waste disposal and reprocessing facilities are safeguarded.

The stalemate appears recently to have been broken by West Germany's leading power station constructor Kraftwerk Union (KWU) being awarded a contract for a second station with a capacity of 1,200 megawatts at Ohi, in eastern Bavaria. This follows moves in Hessen to offer waste disposal and reprocessing sites and the decision of a district court (whose jurisdiction includes Gorleben) to agree provisionally to an interim waste disposal site.

Time Lag

However, the fact that the second Ohi station is expected to come on stream only in 1988 underlines the substantial time lag between the award of a contract and its completion. (It should also be noted that virtually all nuclear power stations already commissioned went into operation after — at times well after — the original target date.)

There have been a number of studies recently estimating the additional supply required to avoid an energy gap sometime during the current decade. Table 1 indicates the required capacity (including reserve capacity) which should be installed between now and 1990 to meet peak demand, assuming an annual increase in consumption of 4.5 percent. (The increase in 1979 was 4.4 percent, although this year's, in view of the expected lower economic growth, it is likely to be less.)

The 1978 total consisted of 23,500 MW baseload capacity (including 8,000 MW in nuclear stations) and around 50,000 MW of middle and peak load capacity. The gap in baseload capacity had consequently to be filled by the less economic middle load stations. As an expansion in soft coal and hydroelectric-based capacity is no longer possible, the entire additional need for baseload should fall to nuclear power — 9,600 MW by 1985 and an additional 13,600 MW by 1990, a total of 23,200 MW. This is already 5,000 MW short of earlier estimates, the result of a lower increase in the peak load and the commissioning of hard coal-based stations.

In other words the 1978 nuclear capacity would have to be more than doubled by 1985 and almost trebled by 1990 to avoid what a study describes as "difficulties in meeting demand." The input of hard coal in power stations should also rise, though at a slower pace — nearly a third by 1985 and by more than 50 percent by 1990.

To support the case for expansion in nuclear capacity the public utilities emphasize the tough safety regulations governing West Germany's nuclear pressurized water reactors, especially since the Three Mile Island accident in the United States last year.

They also underline the flexibility and efficiency of nuclear power justifying the admittedly much higher initial capital investment.

The availability of waste heat for

district heating systems, the coupling of nuclear stations with coal gasification plant, particularly the helium-cooled high temperature reactor, and the availability of heat pumps for house and water heating, are among the advantages cited.

Further delays in the nuclear power station program has of course much wider implications than even the safeguarding of electricity supply. It involves the main contractors of power generation and transmission equipment, KWU and Brown-Boveri, particularly the former who — in spite of such export opportunities as offered in Latin America and the ill-fated orders in Iran — rely on a steady flow of work at home to maintain and expand capacity and retain skilled labor.

KWU, a subsidiary of Siemens, has been plagued by short time working and redundancies in recent years and its chief executive, Klaus Barthelt, has warned of a "brain drain" of skilled scientists, technologists and engineers if the nuclear impasse continued. (Nevertheless, KWU, managed to produce a profit, admittedly on lower turnover, last year.)

Supporters of an expanded nuclear power program argue that, apart from its implications on electricity supply and the suppliers of plant and equipment, it also has a technological spinoff which an industrially advanced country such as West Germany can ignore only at its peril.

There is no shortage of opponents to nuclear power, however, on the grounds of safety, proliferation and the fear of a "plutonium economy." The nuclear issue is certain to be a feature of the federal elections in May and October, as in Sweden and other countries, and may decide the fate of the present Social Democratic-Free Democratic coalition government.

—A.H.

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50%	50%	2512	8.44	1.9	4	102	37%	26	11%	37	—
Q-10											
62	24%	OKC	1.20	2.3	7	182	51%	50%	51%	+ 1/2	12
46	29%	10 Comp	1.20	2.3	7	182	51%	50%	51%	+ 1/2	12
100	29%	10 Comp	1.20	2.3	7	182	51%	50%	51%	+ 1/2	12
31%	18%	OcciPet	1.50	4.3	3	1617	23%	21%	22%	—	34
100	29%	10 Comp	1.20	2.3	7	182	51%	50%	51%	+ 1/2	12
100	29%	10 Comp	1.20	2.3	7	182	51%	50%	51%	+ 1/2	12
99%	59	OcciPet	1.50	4.3	3	1617	23%	21%	22%	—	34
99%	59	OcciPet	1.50	4.3	3	1617	23%	21%	22%	—	34
22%	15%	OcciPet	1.212	14	2	179%	15%	15%	15%	—	17
22%	15%	OcciPet	1.212	14	2	179%	15%	15%	15%	—	17
22%	15%	OcciPet	1.212	14	2	179%	15%	15%	15%	—	17
22%	15%	OcciPet	1.212	14	2	179%	15%	15%	15%	—	17

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